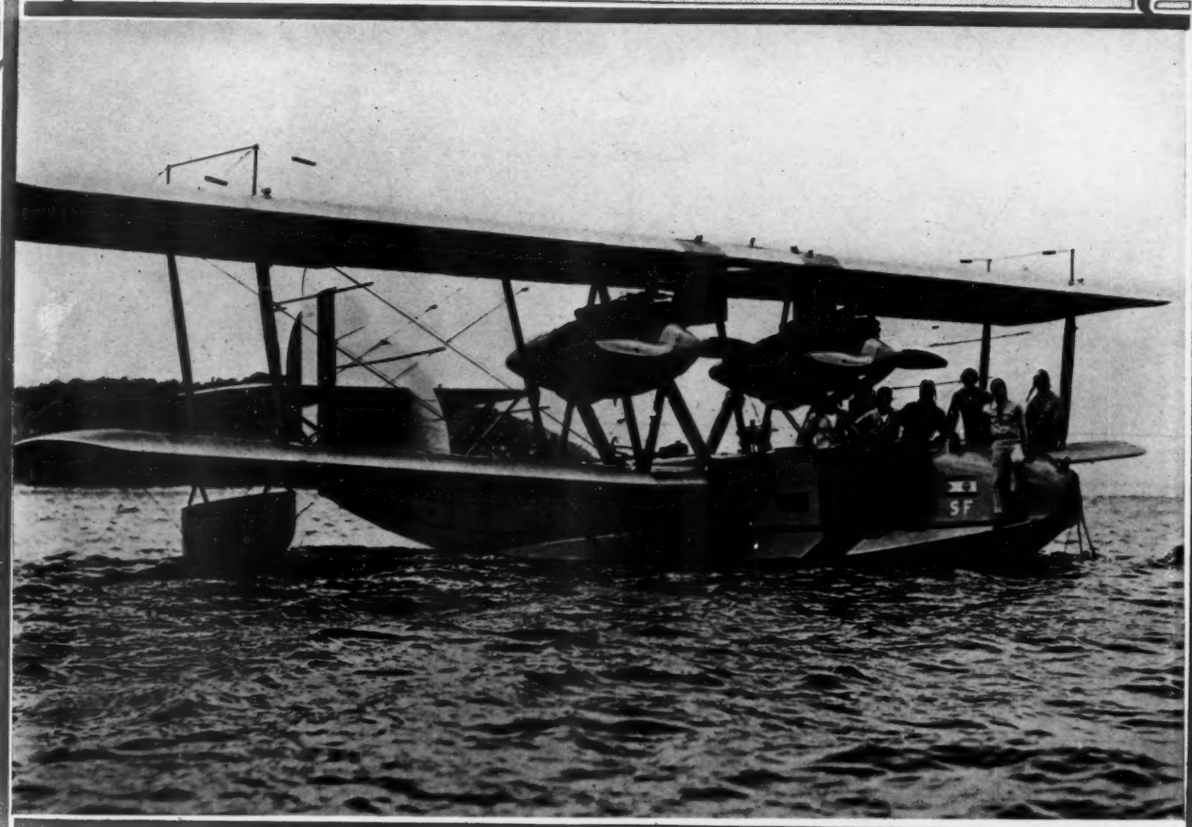
AVIATION

The Oldest American Aeronautical Magazine

MARCH 31, 1924 **Issued Weekly** **PRICE 10 CENTS**



The Navy's newest scouting plane—the PN7 flying boat (2—550 hp. Wright T2 engines)

VOLUME XVI **NUMBER 13**

SPECIAL FEATURES

THE MIAMI AIR MEET
LIGHT PLANES AND GLIDERS
START OF THE AMERICAN WORLD FLIGHT
ALL ABOUT THE FOREIGN ROUND THE WORLD FLIGHTS

GARDNER PUBLISHING CO., INC.
HIGHLAND, N. Y.
225 FOURTH AVENUE, NEW YORK

Entered as Second-Class Matter, Nov. 22, 1920, at the Post Office at Highland, N. Y. under Act of March 3, 1879.

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MARCH 31, 1924

AVIATION

VOL. XVI. NO. 13

Published every Monday

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GARDNER PUBLISHING COMPANY, Inc., *Publishers*

GENERAL AND EDITORIAL ROOMS: 225 FOURTH AVENUE, NEW YORK

Publication office

HIGHLAND, N. Y.

Subscription price: Four dollars per year. Single copies ten cents. Canada, five dollars. Foreign, six dollars a year. *Copyright 1924, by the Gardner Publishing Company.*

Issued every Monday. Forms close ten days previously. Entered as second-class matter Nov. 22, 1920, at the Post Office at Highland, N. Y., under act of March 3, 1879.

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THE AERONAUTICAL SUPPLY HOUSE

PUBLISHER'S NEWS LETTER

Oil and Justice are not to be the only matters investigated in Washington. Aircraft is to have its full share of attention. Congress has ordered an investigation of the Air Services and the Committee has been appointed. There have appeared so many bulky volumes on this subject that it would seem that little new could be said by the industrious group who have been behind this agitation since before the War.

* * * *

Who compose this group and what their motives are would make an equally interesting field for investigation. The first real agitation started in the old Aeronautical Society, now defunct, when several patent attorneys and inventors gave out in the name of the society sensational publicity which had a bearing on some claims for infringement that they were interested in. Then, the well known sculptor Gutzon Borglum tried to interest the government in his invention of a super excellent airplane. He possibly had in mind Leonardo Da Vinci, who also had aerial ambitions. Soon he was in difficulties with the governmental engineers. When no progress could be made there, he appealed to his friend President Wilson and received permission to investigate what he said was a conspiracy to prevent his great inventions from being manufactured. The Congressional Record of May, 1918, gives his correspondence with the government and shows his animus in the matter.

* * * *

Then came the perennial Woodhouse attacks. As a former competitor in the aerial publishing field it ill becomes us to inquire into his motives. Any publisher of an aviation paper that has discontinued can easily find reasons for a disgruntled attitude. Henry Woodhouse has certainly been ceaseless in his sweeping attacks on the manufacturers of aircraft as well as the important persons engaged in promoting aviation in this country.

* * * *

The next figure to appear was James V. Martin whose claims to fame are long and many in the aeronautical invention field. Owing to what he terms a conspiracy by every one in aeronautical work to prevent his inventions from being used he has been indefatigable in his campaign to besmirch almost every one in the field. His suit against practically all companies, including even the publishers of AVIATION, and a long list of Army and Navy officers for the sum of $52,000,000 has been thrown out of court. He now is one of those who is giving Representative Nelson the old claims reworded in new form.

* * * *

Sculptor Borglum took the credit recently for introducing Gaston B. Means into the aircraft investigations. Borglum claims that he had Means assigned to his work by President Harding after Means had been released from the Department of Justice. Only last week Means testified in Washington that he received $100,000 from "a Jap" to prevent an investigation of the Standard Aero Corporation case. Means claims that he reported to Captain Scaife who was at that time in the Department of Justice and is also in the forefront of the aircraft attackers.

* * * *

This group aided by a few minor or incidental friends have kept persistently after the aircraft industry and the fruits of their efforts will bloom in the coming aircraft investigation. The army and navy air services should welcome such an opportunity for if there is any foundation for the claims of huge graft, there will be an opportunity for proof and disproof. Without such a showing these statements would go on for all time. In the same way, the aircraft industry should welcome the investigation as the public has been so completely overwhelmed by insinuations and open assertions that now is its chance to show just how much money the government paid for aircraft, to whom it went and what it produced. After that is done we are confident that there will be no more loose talk about the "billion dollar aircraft scandal."

* * * *

AVIATION has not felt that its readers were interested in these attacks and scandalous charges. The old newspaper saying, "The denial never catches up," is particularly true in aviation. Therefore it has been only on rare occasions that mention has been made of the undercurrent of much that has been flowing steadily toward the filtration beds. We hope that by publishing the constructive side and leaving the destructive critics to their own methods of expression that we have been serving our readers as they would wish.

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CONTRIBUTING EDITORS

Vol. XVI MARCH 31, 1924 No. 13

Air Power Cost vs. Sea Power Cost

CAPTAIN DUDLEY W. KNOX, of the Historical Section of the Navy Department has written a letter to AVIATION which is reproduced in this issue. In this letter he corrects certain statements that he made in a recent address which AVIATION published in its issue of March 3.

Captain Knox now makes the definite statement that "200 Barling Bombers would cost $40,000,000," adding that "this correction would automatically correct my statement that air power substitute for a battleship would be ten times as expensive. In other words, the air power substitute for a battleship would actually be only about five times as expensive."

We can easily understand how in an extemporaneous address one might make a slip of forty million dollars. Nevertheless, the fact that an officer who reached the rank of captain in the Navy did not know that the production cost of 200 Barling Bombers would be much less than 200 times the cost of the first experimental machine—$400,000—makes us question the accuracy of his other figures.

It is therefore with the greatest interest that we invite Captain Knox to submit to the aeronautical world through the medium of our columns any proof he may have for the statement that air power is five times as expensive as sea power. Naval officers may claim to have a full appreciation of the importance of aviation as an arm of the fleet. But when they assert that it is five times as expensive, it can only be termed "faint praise."

Furthermore, we shall be glad to learn whether Captain Knox secured his information as to the cost of 200 Barling Bombers from the Army, that built the ship, or from the Navy. We are of the opinion that the Army will question the cost price quoted. It also seems inconceivable that the Bureau of Naval Aeronautics would subscribe to Captain Knox's "five times as expensive" claim. We hope that Admiral Fullam will want to reply to that portion of Captain Knox's letter which refers to him.

Perhaps these friendly discussions may after all bring out the real value and cost of air power. If so, our purpose will have been served.

Government Race Entries

IT appears from our foreign correspondence that the questions which AVIATION raised in a recent editorial with regard to the competition of government aircraft with civilian race entries is receiving interested attention in France.

The leaders of the French aviation world seem to be unanimously agreed that records made by government owned aircraft should not be homologated in a distinct category. The reason for this attitude is that the personal equation plays such a preponderant role in the establishing of records that it makes small difference whether or not the pilot wears a uniform. While this view is undoubtedly sound, we don't feel that it tells the whole story.

The fact is that European opinion is generally opposed to the participation of government services in airplane races through entries of military or naval aircraft and pilots. It is held that airplane constructors cannot be expected to be able to compete with a government service which has large funds at its disposal for experimental development. In Europe, the aircraft constructors have pilots under annual retainer fees, and these are the men who compete in races. Military pilots, as such, do not so compete. If they do at all, they do in private capacity, being on leave for this purpose, and if they suffer an accident they are not entitled to the benefits normally accruing from their military quality.

It is doubted in French aviation circles that it would be desirable to change the existing order of things as there is little inducement for the private constructor to build racing planes to compete with government made and entered American planes. Sadi Lecointe, after reading the editorial of AVIATION in question, remarked that our position was "very logical." Others, prominent in French air circles, have expressed themselves no less definitely on this subject.

On the other hand there stands the fact that in this country few, if any, new worlds records would have been established had it not been for government assistance. But, this very assistance will make it practically impossible for foreign constructors to have a sporting chance in retrieving lost trophies and records. Left to private initiative, the records of American aircraft would probably have remained in the class as they were before the war. From the American viewpoint, therefore, it has been a glorious achievement; but in the eyes of Europe it looks as if it would call a halt to international air racing.

An Interesting Flying Boat

THE Navy's latest scouting plane, the PN7, which is shown on this week's cover, offers considerable interest as an improvement on the well tried F5L flying boat. While retaining the latter's hull, the PN7 has high performance wings which made it possible to reduce the span by some 20 feet and also to clean up the wing bracing. The performance is on the other hand very greatly improved by the fitting of two 550 hp. Wright T2 heavy duty engines.

The PN7, which carries the flag of Capt. W. R. Gherardi, Commander, Aircraft Squadrons, Scouting Fleet, since January 1 has flown from Philadelphia to within 80 miles of the South American coast, through all of the West Indies, covering a total distance of 8000 miles.

As a further improvement, a metal hull is now being developed for this flying boat by the Naval Aircraft Factory.

Start of the American Round-the-World Flight

Major Martin's Four World Cruisers Fly from Santa Monica To Seattle, the Official Starting Point

Unofficially the American World Flight organized by the Army Air Service started on March 17, when the four planes took off from Santa Monica, Calif., where the machines were built, en route for Seattle, Wash., the official starting place of the expedition.

The planes carried the regular crews assigned to them for the World Flight, as follows:

Plane One—Pilot and Flight Commander: Maj. Frederick L. Martin, A.S. Mechanic: Staff Sergt. Alva L. Harvey, A.S. Technical School.

Plane Two—Pilot: Lieut. Lowell H. Smith, A.S. Mechanic: Sergt. Arthur H. Turner, 91st Obs. Sqn.

escort of seventeen planes from Crissy Field, led by Lt. Col. William E. Gillmore, air officer of the 9th Corps Area, accompanied the World Cruisers to Sacramento, where they landed at 2.05 p. m. Owing to thick weather the planes were two hours late in starting from Clover Field.

Plane No. 4, Lieutenant Nelson's ship, did not start with its team mates, as the pilot had flown to San Diego the previous day to have his compass adjusted.

On March 18 Major Martin's three ships proceeded from Sacramento to Eugene, Ore.—a place well known to pilots who have done forest patrol work. The take-off occurred at 9.48 a. m. in a 25 mi. wind and a cloudless sky. The original

All but one of the crew of the American World Flight—(L. to R.) Lieut. L. Wade, Maj. F. L. Martin (in command), Lieut. E. Nelson, Sergeants Ogden and Turner, Lieut. L. Smith and Lieut. J. Harding. Sergeant Harvey is missing from this picture

Plane Three—Pilot: Lieut. Leigh Wade, A.S., Mechanic: Staff Sergt. Henry H. Ogden, 57th Serv. Sqn.

Plane Four—Pilot: Lieut. Erik Nelson, A.S., engineer officer. Mechanic: Lieut. John Harding, A.S.O.R.C., maintenance officer.

Lieuts. LaClair D. Schulze and Leslie P. Arnold who are shown below standing beside one of the World Cruisers, are the alternate pilots who have undergone the same training as that taken by the pilots who will actually make the trip; but they will not fly around the world unless the regular pilots encounter sickness or accident before the flight leaves America.

It will be of interest to record that Major Martin was born in Indiana; Lieutenants Smith and Schulze, and Sergeant Turner in California; Lieutenant Wade in Michigan; Lieutenant Nelson in Sweden; Lieutenant Arnold in Connecticut; Lieutenant Harding in Tennessee; Sergeant Ogden in Mississippi, and Sergeant Harvey in Texas.

The Rallying Flight

The start of the "rallying flight" from Santa Monica to Seattle put an end to a long round of festivities which were given in honor of the World fliers and which culminated on March 16 in the greatest air carnival the Pacific Coast has ever seen.

The following day three of the World Cruisers took off from Clover Field, at 9.32 a. m.—those of Major Martin and Lieutenants Smith and Wade, in the order named. An aerial

flying schedule for the second leg called for a stop at Portland, but as this would have made an unduly long trip followed by a very short one the following day, to Vancouver Barracks, it was decided to stop instead at Eugene. This change shortened the flying route by about 175 mi.

The ships of Major Martin and Lieutenant Smith landed at Eugene at about 4 p. m. Lieutenant Wade, on No. 3, had a forced landing at Cottonwood, Calif., but joined his companions later in the day. Lieutenant Nelson, on No. 4, having fixed his compass, flew that day from San Diego to Los Angeles, but was prevented from pushing on by bad weather.

Rain and thick clouds threatened the World fliers' progress on March 19. Major Martin's three ships took off from Eugene at 11 a. m. en route for Seattle, but owing to the thick weather they landed an hour later at Vancouver Barracks, Wash. After being entertained in Portland, Ore. at a civic luncheon, the fliers pushed off again at 2.50 p. m., hoping to make Seattle. It was raining when they started, and as they proceeded northward the rain increased in violence, with low lying clouds making for bad visibility. The low altitude at which the planes were compelled to fly made the hazard of colliding with hills acute, so Major Martin decided to return to Vancouver Barracks and landed there without incident at 4 p. m.

In the meantime Lieutenant Nelson made a very remarkable flight by hopping off from Los Angeles at 5.40 a. m. and landing at Eugene at 3.25 p. m. thus making a non-stop flight of

almost 10 hr. in very bad air conditions, which is no mean accomplishment. As a matter of fact he had intended to go straight through to Seattle without stop, but he found the rain at Eugene too heavy and so postponed that part of the trip.

March 20 all the four planes reached Sand Point Field, Seattle, thus completing the rallying flight and settling down to the work of preparations for the official start of the World Flight. These preparations include the replacing at the Boeing plant of the wheeled landing gears with pontoons, which will be used all the way to Calcutta, India, whence land gears will again be used as far as Hull, England. There float gears will once more be substituted for the great venture across the Atlantic by way of Iceland, Greenland and Labrador, and used as far as Boston.

While the crossing of the Atlantic appears on first sight to be the most difficult portion of the route, it should be noted that the flight from Alaska via the Aleutian Islands and the Kuriles, which faces the World fliers right at the start, is not a whit less hazardous. As a matter of fact it is here that the longest oversea flight occurs—the 860 mi. stretch from Chicagoff to Kashibawara Bay.

The Tentative Schedule

The tentative itinerary and time table prepared by the Air Service for the World Flight is printed below. In this connection it is said in official quarters that unless the flight moves throughout the entire route with a regularity which will allow it to pass through the "danger zones" during a given period, the eventual success of the expedition is doubtful.

However, Air Service officials are confident that with anything like an even break of luck all of the four planes will return to their starting point on schedule. Previous attempts to encircle the world by air have been unsuccessful, but the forthcoming attempt of the U. S. Army Air Service has been so carefully planned in every detail that high hopes are entertained for its successful completion.

	Stat. mi.	*Estimated Date of Arrival*
FIRST DIVISION		
*Seattle, Wash.		March 24, 1924
Prince Rupert, B. C.	650	April, 1, 1924
†Sitka, Alaska	300	
Cordova, Alaska	475	April 3, 1924
Seward, Alaska	135	
Chignik, Alaska	450	April 5, 1924
*Dutch Harbor, Unalaska, Alaska	400	April 8, 1924
Nazan, Island of Atka	350	
†Chicagoff, Island of Attu	530	April 11, 1924
SECOND DIVISION		
Kashiwabara Bay, Paramushiru, Kuriles	860	April 14, 1924
Bettobu, Yetorofu, Kuriles	510	April 15, 1924
Minato, N. E. Coast Honshu, Japan (Aomori to be used as Supply Base)	475	April 17, 1924
Kasumiga Ura, Japanese Air Station *(Yokohoma to be used as Supply Base)	395	April 22, 1924
Osaka, Japan, Japanese Air Station	360	April 26, 1924
Kagoshima, Kyushu, Japan †(Nagasaki to be used as a Supply Base)	380	April 27, 1924
THIRD DIVISION		
†Shanghai, China	610	May 5, 1924
Amoy, China	555	
Hong Kong, China	300	May 8, 1924
Haiphong, French Indo-China	500	May 10, 1924
Tourane, French Indo-China	395	May 13, 1924
†Saigon, French Indo-China	530	May 17, 1924
Bangkok, Siam	675	May 19, 1924
Rangoon, Burma	450	May 22, 1924
Akyab, Burma	445	May 26, 1924
*Calcutta, India	400	May 28, 1924
FOURTH DIVISION		
Allahabad, India	475	June 4, 1924
Delhi, India	380	June 6, 1924
Multan, India	425	June 7, 1924
†Karachi, India	475	June 9, 1924
Charbar, Persia	330	June 10, 1924
Bandar, Abbas, Persia	330	June 11, 1924
Bushire, Persia	400	June 13, 1924
†Bagdad, Irak	475	June 14, 1924
Aleppo, Syria	480	June 16, 1924
Konia, Turkey	285	June 17, 1924
*San Stefano, Turkey	300	June 19, 1924

Lieuts. Leslie P. Arnold and L. D. Schulze, A.S., alternate pilots for the American World Flight

FIFTH DIVISION		
Bucharest, Roumania	290	June 23, 1924
Belgrade, Serbia	290	June 24, 1924
Budapest, Hungary	220	June 25, 1924
†Vienna, Austria	140	June 26, 1924
Strasbourg, France	400	June 27, 1924
Paris, France	250	June 28, 1924
*London, England	225	July 1, 1924
SIXTH DIVISION		
*Brough, (Hull), England	155	July 2, 1924
Kirkwall, Orkney Islands	370	July 10, 1924
†Thorshaven, Faroe Islands	275	July 12, 1924
Hofn Hornafjord, Iceland	260	July 13, 1924
†Reykjavik, Iceland	339	July 14, 1924
†Angmagsalik, Greenland	500	July 16, 1924
†Ivigtut, Greenland	500	July 18, 1924
Indian Harbor, Laborador	572	July 24, 1924
Cartwright Harbor, Laborador	40	July 26, 1924
Hawkes Bay, Newfoundland	290	July 28, 1924
Pictou Harbor, Nova Scotia	420	July 30, 1924
Boston, Mass.	520	Aug. 2, 1924
Mitchel Field, L. I., N. Y.	175	Aug. 8, 1924
Washington, D. C.	220	Aug. 10, 1924

*Main supply base.
†Minor supply base.

To Avoid Bad Weather

The following schedule of movement will allow the minimum of bad weather taking into consideration the fact the flight must be completed within a period of six months at the longest.

1st Division—Seattle to the Island of Attu, including the first portion of 2nd Division (through the Kurile Islands)—April and May.

2nd Division—Japan proper and Chosen—May and June.

3rd Division—Kagoshima, Japan to Calcutta—May, June, July.

4th Division—Calcutta to Constantinople—June, July, August.

5th Division—Constantinople to London—July, August.

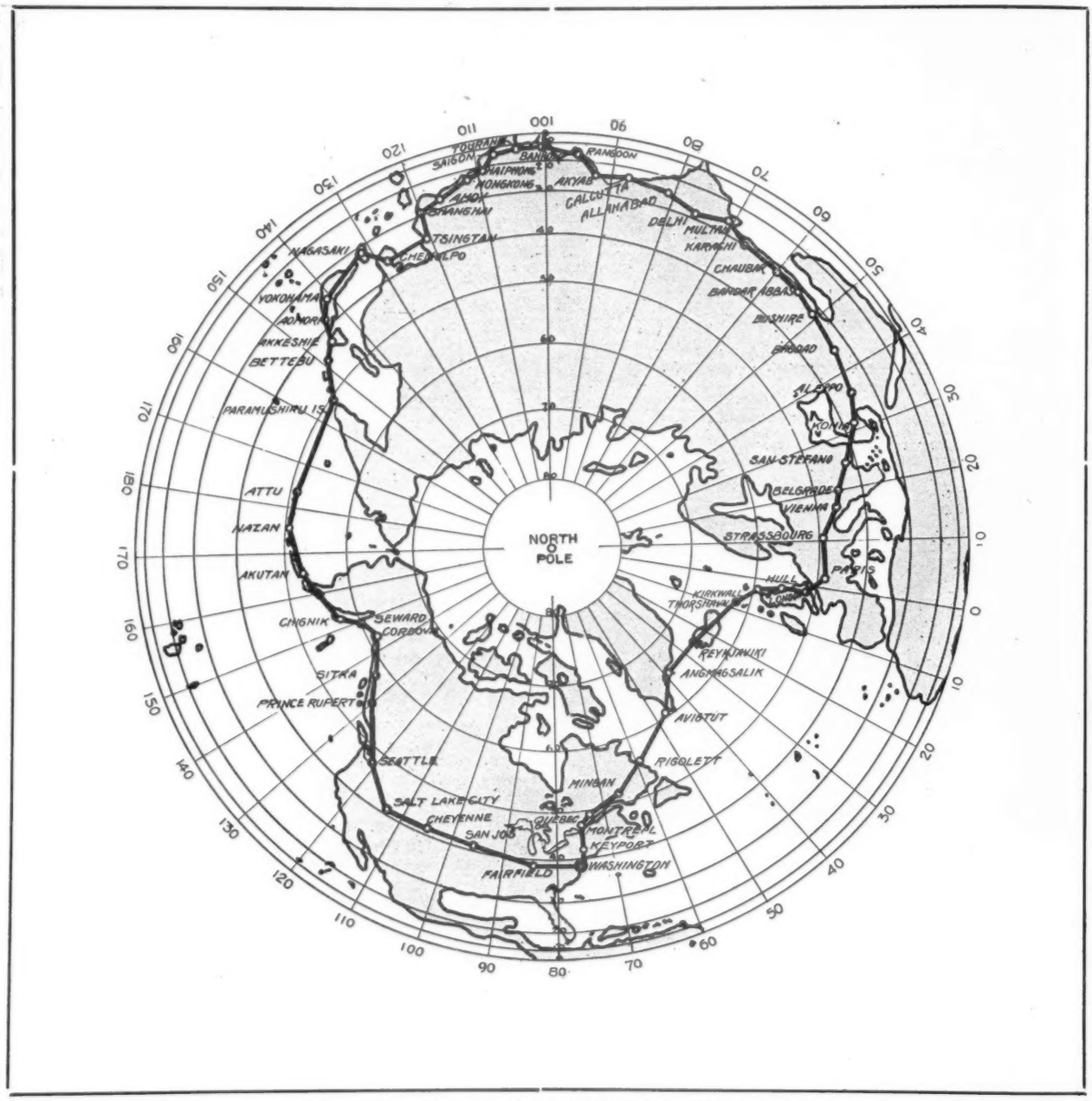
6th Division—London to the United States—August and September.

It should be borne in mind that should any condition re-

lating either to weather conditions, or the facilities for landing, come to the attention of the advance officers, which has not been foreseen, and which will in their opinion entail undue danger, they will immediately communicate with office of the Chief of Air Service stating the circumstances clearly, by the most rapid means of communication available to them.

Drake's Motto

Miss Marjorie Joesting of Washington, D. C., has presented a pair of silver wings on behalf of friends of the pilots to the Army aviators when they left the Capitol en route to California, prior to their hop off. On the wings which Major Martin will wear around the world are inscribed the immortal



Map of the Army Air Service's Round-the-World Flight

It is expected that the fliers will arrive about April 28 at Kasumigaura on Choshi Ko, where motors will be changed. Calcutta, India, will be reached probably about May 24; here new wings will be fitted, new motors installed and pontoons replaced with landing gears. At San Stefano, just outside Constantinople, is a Turkish airdrome which the fliers hope to reach about June 16. Motors will be changed there. Arriving at Brough near Hull, England, about July 7, the engines will be changed again for the last time, and landing wheels replaced with pontoons for the final and perhaps most dangerous lap, the hop across the northern Atlantic by way of Iceland and Greenland.

words of Sir Francis Drake, who was the first to pilot a ship around the world, "It matters not; God hath yet many things in store for us."

Miss Joesting in making the presentation said: "It was the unconquerable spirit and leadership expressed in these words, in the face of storm and disaster, that held his crew to their task and inspired them to achieve the impossible. I am sure that our twentieth century navigators of the air under your leadership will surmount every obstacle and write their names high on the list of those who by their vision and achievement have increased the heritage and sustained the glorious traditions of our race."

The Foreign Round-the-World Flights

Particulars About the Attempts of the British, Portuguese And Argentine Air Services

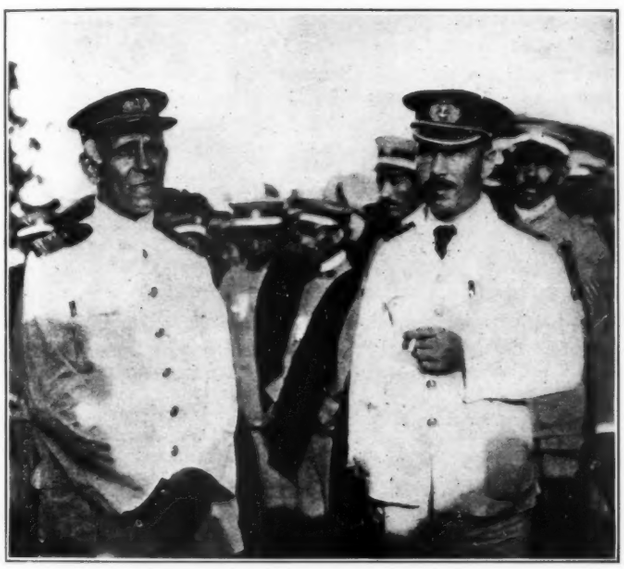
The start of the American World Flight Expedition under Maj. Frederick L. Martin, A.S., gives timely interest to similar world circling attempts now being organized by foreign air services.

These are three in number: the British flight of Squadron Leader A. Stuart Maclaren, R.A.F., the Portuguese flight of Capt. Sacadura Cabral and Admiral Gago Coutinho, and the Argentine flight of Maj. D. Pedro Zanni.

The British Flight

The personnel of the British world flight consists of Squadron Leader* Maclaren, pilot; Flight Officer W. N. Plenberlieth, navigator, and Engineer Sergeant Andrews, mechanic.

The expedition started from Calshot, near Southampton on Tuesday, March 25, and made its first stop at Havre,



Admiral Gago Coutinho (left) and Capt. Sacadura Cabral, the Portuguese World Fliers

France. Thence they will fly to Lyons, Brindisi, Athens, Cairo, Bagdad, Basra, Karachi, Calcutta, Rangoon, Hong Kong, Tokio and across the Pacific by way of the Aleutian Islands, to Vancouver, Toronto and Newfoundland. According to the present plan, the Atlantic will be crossed by way of the Azores and Lisbon.

It is possible, however, that the hop across the Atlantic will be made from Newfoundland to Ireland, an overseas distance of more than 1900 mi.

Lieut. Colonel Broome recently arrived in Vancouver, B. C., to make arrangements for the British world flight. The Canadian government has placed the fishery cruiser Thiepval at his disposal to establish twenty fuel depots between Vancouver and Tokyo at points about 300 mi. apart.

Lt. Col. W. G. Barker will be in charge of Canadian arrangements of the flight. The machine used will be a Vickers Vulture, a development of the well known Viking, and is fitted with a 450 hp. Napier Lion. Two spare engines have been despatched from England, one to Tokyo and the other to Toronto.

The Portuguese Flight

The Portuguese world flight expedition which Captain Cabral and Admiral Coutinho propose to undertake will largely follow the same route as the British expedition. The fliers will, however, start from Lisbon, Portugal, and fly across the greater width of the Mediterranean Sea, via Algiers, Malta and Crete, to Aleppo, whence their route will join the British itinerary at Bagdad.

The round the world route of the Portuguese fliers will be divided into three sections, as follows: I. Lisbon-Yokohama. II. Yokohama-St. John, Newfoundland. III. Newfoundland-Lisbon. Following are the stopping points scheduled for this flight, with the distance in nautical miles:

Section I. Lisbon-Yokohama

	Distance
Lisbon - Algiers	660
Algiers - Malta	560
Malta - Crete	530
Crete - Aleppo	590
Aleppo - Basra	630
Basra - Bander Abas	540
Bander Abas - Karachi	660
Karachi - Delhi	600
Delhi - Alahabad	330
Alahabad - Calcutta	400
Calcutta - Rangoon	580
Rangoon - Bangkok	360
Bangkok - Saïgon	480
Saïgon - Turan	500
Turan - Macau	500
Macau - Fuchau	450
Fuchau - Shanghai	360
Shanghai - Nagasaki	440
Nagasaki - Kobe	360
Kobe - Yokohama	340
	9,870

Section II. Yokohama-St. John, N. F.

	Distance
Yokohama - Akishi	600
Akishi - Sunirshir	400
Sunirshir - Petropavlovsk	480
Petropavlovsk - Attu	520
Attu - Atka	500
Atka - Dutch Harbor	530
Dutch Harbor - Kodiak	540
Kodiak - Sitka	570
Sitka - Vancouver	650
Vancouver - Dunmore	520
Dunmore - Winnipeg	530
Winnipeg - Sault Sainte Marie	560
Sault Sainte Marie - Quebec	540
Quebec - Newcastle	300
Newcastle - St. John	540
	7,580

Section III. St. John-Lisbon

	Distance
St. John - Faial	1,200
Faial - Ponta Delgada	160
Ponta Delgada - Lisbon	780
	2,140

The total length of the Portuguese itinerary is thus 19,500 nautical miles, or 24,425 Statute (land) miles. This is approximately 2,000 miles shorter than the route selected for the American flight.

Captain Cabral and Admiral Coutinho are particularly well qualified for this enterprise on account of their celebrated flight from Lisbon to Rio de Janeiro, when, using successively three Fairey (360 hp. Rolls-Royce) float seaplanes, they crossed the Atlantic between March 30 and June 17, 1922. This flight involved three hops of 700, 800 and 900 mi. respectively, out of sight of all land. As one of the stopping

*Equivalent in rank to an army captain or naval lieutenant.

points, St. Paul's Rock, off the coast of Brazil, is a mere speck in the wastes of the South Atlantic, their success in duly reaching this little island without any convoy represented an uncommonly fine piece of air navigation by sextant and compass. Admiral Coutinho, the navigator, incidentally used a new kind of drift indicator of which he is the inventor.

The Cabral-Coutinho expedition is being actively furthered by the Portuguese government and by the Portuguese naval air service, in particular, of which Admiral Coutinho is the chief. The two airmen expect to circle the globe in approximately 280 hr. flying time, or about at a cruising speed of 70 knots (80 mi./hr.).

Five Fokker TW3 single-engined amphibians will be used in this flight: one machine per route division, with two

Maj. D. Pedro Zanni, chief of the Argentine World Flight

machines kept in reserve. The plans call for the machine assigned to the first division to cover 9,900 mi. in 141 flying hours, the motor being replaced at Rangoon after 87 hr. of flying. The second plane would fly 7,600 mi. in 109 hr., with a possible change of the motor at Vancouver. The third plane would fly 2,150 mi. in 31 hr. Spare parts and fuel depots will be established at the Kurile Islands and the Aleutian Islands by two Portuguese government steamers of 2,000 tons, the Viana and the Gaia, which will "stand by" in those regions for all emergencies. These steamers have been converted into aircraft tenders.

The itinerary calls for the start in March so that the fliers would reach India in April, Japan in May, the Aleutian Islands between May and June, Newfoundland in July, and cross the Atlantic between July and August—which appear to be the most favorable seasons from the meteorological viewpoint.

The chief specifications drawn up by the Portuguese naval air service for their World Cruisers are as follows: 1. Amphibian flying boats with 12 in. clearance between the hull and the ground with land type chassis in place—or interchangeable wheel and float planes. 2. Fuel tankage of 1000 liters. 3. Hull or floats to have water-tight compartments and means for evacuating the water even with flooded compartments. 4. No veneer in the hull construction; laminated wood construction at 90 deg. with a water-tight layer between is preferred. 5. Rolls-Royce Eagle or Napier Lion engine. 6. Take-off in wind of 9 mi./hr. with full load. 7. Cruising speed of 80 mi./hr. 8. Maximum fuel consumption, 90 liters per hour.

The cost of the expedition is estimated at 5,000,000 francs.

The Argentine Flight

Little definite information is on hand regarding the round-the world flight planned by Major Zanni, one of the ablest pilots of the Argentine army air service. Lieut. Nelson T. Page of the Argentine naval air service is slated to act as navigator, and Felipe Beltrame as mechanic.

Their plans call for an itinerary essentially similar to that of the British expedition, except that the Argentines propose to start from Rome, Italy. The route selected is by way of Constantinople to Bagdad, thence via the itinerary of the British and Portuguese fliers through India, Burma, French Indo-China, China, Japan, the Kuriles, and the Aleutian Islands to Vancouver, B. C., whence they would steer South to San Francisco, follow the Air Mail route to New York, and finally cross the Atlantic Ocean from St. John's, N. F., to Ireland and complete the flight in Rome. The length of this route is approximately 22,000 (Statute) mi.

The starting point selected for this flight leads to the natural assumption that Major Zanni's expedition will use Italian planes, although nothing definite is known to that effect. But considering that the Argentine army air service is largely equipped with planes of Italian manufacture, Major Zanni's preference for them would only be natural. In fact it has been rumored that he was contemplating to use for the world flight a modified Fiat ARF tractor biplane with the 700 hp. Fiat engine, which has a top speed of 150 mi./hr. and carries fuel for 11 hr. at full speed and for 18 hr. at cruising speed.

A recent newspaper despatch reported Major Zanni's presence in England. He was said to have completed the preliminary work of obtaining estimates which have been submitted to the committee in charge of the flight at Buenos Aires, and to be awaiting the committee to select and approve one contract for the construction of an airplane and a seaplane.

Several English manufacturers agreed to use special facilities to have the planes ready to leave April 25, which would allow the flight to be made before the advent of prohibitive heat in the tropical countries.

If all these expeditions get under way, the world will witness a thrilling competition between Americans flying American aircraft, Britons flying British aircraft, Portuguese flying Dutch aircraft and Argentines flying Italian, or perhaps British, aircraft. It is significant of the trend of world affairs that two of these expeditions should hail from the Western Hemisphere.

"Relation of Air Power to Sea Power"

NAVY DEPARTMENT
OFFICE OF NAVAL INTELLIGENCE
Historical Section
WASHINGTON

Editor, AVIATION:—

My attention has only just been called to the reprint in your issue of March 3, 1924, of an address delivered by me to the District of Columbia department of the Reserve Officers Association.

In the editorial note preceding my paper you make several inferences and statements to which I request the privilege to reply in your columns.

First: You infer that my address was propaganda. The invitation to speak before the District of Columbia Reserve Officers Association was entirely unsolicited by me and was accepted with some reluctance. The distribution of the speech in multigraphed form was done by the Reserve Officers Association without any suggestion on my part, and I am in no way responsible for it. I retired from the Active List of the Navy about two and a half years ago and have since been on duty in the Historical Section of the Navy Department, which has no connection with Aviation except that part relating to Aviation activities during the World War.

Second: You infer that my paper was an attack upon the effectiveness of Aviation; whereas its general tenor was in the opposite sense as will be seen from the following quotations therefrom:

"Gentlemen,—Today Air Power is absolutely indispensable to the successful operations of your fleet and your army."

* * * * * *

"In the future a fleet without adequate Naval Aviation to support it will be only half a fleet, and will be an easy victim for an enemy having power in ships which are properly supported by their own air units."

* * * * * *

"I think that it is apparent that while bombing planes are extremely valuable for defence against raiding forces, they are not all-sufficient, and that the primary defence must continue to be high-powered guns in conjunction with mine fields."

The final paragraph of the article reads as follows:

"Now I hope nobody will misunderstand me. I do not wish to minimize in the slightest degree the exceedingly great importance and value of air power. There is no auxiliary to land power or to sea power which is more indispensable (Here you have erroneously used the word 'desirable'.) than air power."

You also question the accuracy of many of my statements. For three of those emphasized by you I accept correction.

(1) "200 Barling bombers will cost $80,000,000."

This estimate was based upon reliable figures given me for the cost of one Barling bomber; without the information that on a quantity production basis these costs would be approximately one-half. So that my article should be corrected to read "200 Barling bombers would cost $40,000,000." I made this correction in repeating the lecture a few days later before the Army War College upon the request of one of the faculty of that institution who had heard my original address.

(2) This correction would automatically correct my statement that the air power substitute for a battleship would be ten times as expensive. In other words the air power substitute for a battleship would actually be only about five times as expensive.

(3) The statement attributed by me to General Patrick is correct except the inference that an attacking plane off of Cape Hatteras had *of necessity* to fly 170 mi. before it would be able to reach the firing point. General Patrick said that they did so; but that probably he did not mean to infer that such a long flight was necessary to reach proper altitudes, did not come to my attention until after the address.

As to my other statements in detail and to the main contentions in the article, I still consider them correct and not to be substantially affected by the corrections noted above.

My attention has also been called to an article by Rear Admiral Fullam, appearing in your issue of March 10, in which he accuses me of having made contradictory statements or deductions in the paper in question. His charge is summed up near the latter part by his statement as follows:

"If the enemy's fleet can attack us with impunity under cover of bad weather, and if their battleships are immune from bombing attacks, how can we say that aviation is such an important element of a fleet? We cannot carry water on both shoulders."

Reference to the original article published by you on March 3 will show that Admiral Fullam could not possibly have failed to understand my main contentions therein. I stated that a fleet without adequate naval aviation to support it will be only half a fleet and will be an easy victim for an enemy having power in ships which are properly supported by their own air units, principally because of the aid which air power gives in multiplying the effectiveness of gunfire, scouting and other fleet activities. That is why Aviation is such an important element to the fleet. I did not state that an enemy fleet can attack us with impunity under cover of bad weather. I did state that under conditions of surprise, which would be facilitated by hazy and stormy weather, raiding ships—referring to a small raid not a fleet—may be able to fire nearly all of their ammunition before they will be endangered by planes. Then immediately following this statement I said:

"I think that it is apparent that while bombing planes are extremely valuable for defence against raiding forces, they are not all-sufficient and that the primary defence must continue to be high-powered guns in conjunction with mine fields."

DUDLEY W. KNOX,
Captain, U. S. Navy.
March 17, 1924.

The Pioneer Instrument Co.

The Pioneer Instrument Co. of Brooklyn, N. Y., recently celebrated the fifth anniversary of its establishment. Since that time the firm has been exclusively engaged in the development and manufacture of instruments and accessories for aircraft. The thoroughly equipped factory in which this work is done is shown in the accompanying illustration.

It is not generally realized how many different kinds of instruments and accessory apparatus are used on airplanes, airships and balloons. The following list of such equipment, as manufactured by the Pioneer Instrument Co., is likely to be a revelation to many of our readers:

Accelerometers, Air Distance Recorders (Air Logs), Air Speed Indicators, Air Speed Recorders, Altimeters, Pilot Balloon Balances, Ballonet Indicators, Balloon Manometers, Balloon Speed Compasses, Balloon Tension Meters, Bomb Sights, Banking Indicators, Barographs, Navigation Calculators, Camera Stabilizers, Chronographs, Climb Indicators, Compasses, Course and Distance Indicators, Distance Recorders, Drift Indicators, Earth Inductor Compasses, Electric Tachometer Drive Systems, Electric Turn Indicators, Electric Pitch Indicators, Engine Altimeters, Engine Gage Units, Engine Instrument Boards, Flight Indicators (combined Turn Indicator, Bank Indicator and Gyroscopic Fore-and-Aft Inclinometer), Fore-and-aft Inclinometers, Fuel Flow Indicators, Fuel Gages, Fuel Pumps, Gasoline Level Gages, Gasoline Pumps, Gages, Gyroscopic Apparatus of all kinds, Hand Fuel Pumps, Hythergraphs, Inclinometers, Instrument Boards, Lamps, Landing Lights, Navigation Lights, Liquid Manometers, Manometers, Navigation Calculators, Navigation Lights, Oxygen Apparatus, Pilot Balloon Balances, Pitch Indicators, Pitot Tubes, Pressure Gages, Pumps, Rate-of-Climb Indicators, Recording Manometers, Running Lights, Searchlights, Sextants, Signal Lights, Speed and Drift Indicators, Speed-Compasses (free balloon), Speedmeters (absolute air speed and distance indicators), Speed Timers, Gyroscopic Stabilizers, Statoscopes, Supercharger Control Systems, Tachometers, Tachometer Drive Systems, Tension Meters, Turn Indicators, Venturi Tubes, Vertimeters.

Plant of the Pioneer Instrument Co. in Brooklyn, N. Y.

Many of the above instruments and accessories are described and illustrated in special circulars. These will be mailed on request by the Pioneer Instrument Company, 754 Lexington Ave., Brooklyn, N. Y.

French Aircraft Exports

The value of French aircraft exports in 1923 totalled 18,746,000 francs, as against 14,351,000 francs in 1922.

Story of the Miami Air Races

By B. RUSSELL SHAW

Executive Vice Chairman, Contest Committee, N.A.A.

A 25 km. course laid out over Biscayne Bay was the tilting ground where seaplane pilots met to test their mounts and skill in a series of four aeronautical events marking the Miami Air Races. While air pilots were circling the course in three of the races, marine contests embracing all types of small water craft were circling a two mile water course. It was an air and water regatta, reminding one of a three ring circus. This illusion was enhanced by the calls of the balloon vendors and cold drink dispensers. Society was out in force and the shores were lined with crowds in gay attire.

Miami Chamber of Commerce Cup Race

Friday, March 7

The first event on the program was a civilian free for all race for the Miami Chamber of Commerce Trophy, six laps of the 25 km. triangular course (93.2 mi.). This was open to all privately owned seaplanes and flying boats.

Cash prizes offered for this event were as follows: First prize, $500; second prize, $300; third prize, $200; fourth prize, $150. Valentine & Co. offered a special prize of $100 in cash which was paid to the winner of the Miami Chamber of Commerce Cup race.

The entries in this event consisted of the following:

Pilot	*Plane*	*No.*	*Engine*	*Hp.*
Harry Rogers,	Curtiss Seagull,	1	Curtiss C6	160
William Reagan,	Curtiss Seagull,	2	Curtiss K6	150
Edward Keddy,	Curtiss MF,	3	Hispano-Suiza	150
Clifford Webster,	Curtiss Seagull,	4	Curtiss K6	150
Arthur B. Chalk,	Aeromarine 39B,	5	Hispano-Suiza	180

Due to the lack of shallow water near the timers' stand and spectators, it was impossible to hold the planes or to beach them prior to the contest. Pilots were instructed, therefore, to leave their bases on the Miami shore about 2 mi. distant and land near the starting line in front of the timers' stand at 12:25, Friday afternoon.

The first flier to land was Pilot Chalk, flying an Aeromarine 39B seaplane. He was followed closely by Rogers, Reagan and Webster, all piloting Curtiss Seagull flying boats.

These four planes, with their engines idling, lined up and were given the starting signal at 12:30, the races being timed from the "gun" or standing start. The planes took off in regular order toward the west, and picking up the first leg of the course continued on their way. The first plane to round the pylon after completing the first lap was Rogers in his Curtiss Seagull. He was flying low and setting the pace for the rest of the contestants. Shortly after, Pilot Keddy arrived at the starting line in his Curtiss MF boat. He had been delayed due to engine trouble. By the time he was ready to start the wind had risen to a squall and some rain was falling. Keddy was unable to start in the race, and after drifting about for a time he succeeded in taking off and returning to his base on the Miami shore, leaving the four original planes in the contest.

Rogers, Reagan and Webster were cutting the pylons fairly close, but Chalk in his Aeromarine was evidently having some engine trouble, not making the speed which he should, and due to the high wind was making his turns very wide.

On the fifth lap Reagan was forced to land near the third pylon and found his gasoline line leaking. He made a hurried repair and immediately took the air to complete the course. However, before arriving at the timers' stand he was forced out and landed at the seaplane base on the Miami Shore. The gasoline tank had sprung a leak and most of the fuel was gone. Working quickly, however, the tank was repaired, and the timers were notified at 4:00 p. m. that Reagan would like to complete the course. He took off and completed the race, finishing in fourth place.

Rogers won the race at a speed of 69.6 mi./hr. The extra speed was obtained by careful streamlining of all cables, an additional streamline nose piece in the front of the crank case of the motor, and a cockpit cover closing all but the pilot's cockpit. A Curtiss-Reed all-metal propeller was also used by Rogers.

Royal Palm Bombing Contest

Friday, March 7

The second event on Friday was the Royal Palm Bombing Contest scheduled for 3:35 p. m.

First prize was the Royal Palm Bombing Trophy; second prize and third prizes, silver loving cups.

The entries were as follows:

Pilot	*Bomber*	*Plane*	*No.*	*Engine*	*Hp.*	*Entrant*
Lt. Harrell	Lt. Finch	F5L	7	2-Liberty	2x360	U.S.N.
Lt. Com. Ramsey,	Lt. Compo	F5L	"	"	2x360	U.S.N.
Lt. Murphy,		HN2	9	Wright J1	200	U.S.N.
Lt. H. L. George,	Capt. R. B. Hough, Jr.	Martin Bomber	14	2-Liberty	2x400	US.A.S.
Capt. E. E. W. Duncan,	Lt. H. A. Craig	Martin Bomber	"	"	2x400	US.A.S.

In order to prevent the pilots flying through the wash of the preceding plane, it was decided to allow each pilot to complete his allotted four trips over the target before the second plane would bomb. This also eliminated the possibility of errors in knowing which plane dropped certain bombs. Arrangements were made for the Martin Bomber, plane No. 14, piloted by Lieutenant George, bomber Captain Hough, to leave Hialeah aviation field and be at their bombing altitude of 1500 ft. ready to drop their first bomb at 3:35 p. m. The crew was given 10 min. for the four trips over the target. The Navy planes were instructed to be over the target ready to drop their first bombs at 3:45 p. m.

In view of the fact that the Martin Bomber was somewhat delayed in arriving at the target, the first crew of the Navy F5L began bombing at 3:40. They had completed three trips over the course when the Martin Bomber was seen approaching, and by the time the Navy had dropped their third bomb the crew of the Martin were ready to let go their first hundred pounder. Immediately upon the completion of the bombing by the F5L, No. 7, the plane was landed and taken over by Lieut. Commander Ramsey and Lieutenant Compo. In the meantime the Martin Bomber had completed its trips and returned to Hialeah field to change crews also.

Bombing a Small Target

The bombing contest was very interesting. Had a battleship been anchored in place of the 30 ft. square target there would have been a large number of direct hits. As it was, most of the bombs landed within a very short radius of the target, not more than 50 ft. from the target at the most, and a greater portion of them landed within a much closer area. Bombing conditions were bad, the air was bumpy, and the ceiling was at approximately 1500 ft., which caused the planes to pass through the clouds on numerous instances on approaching the target.

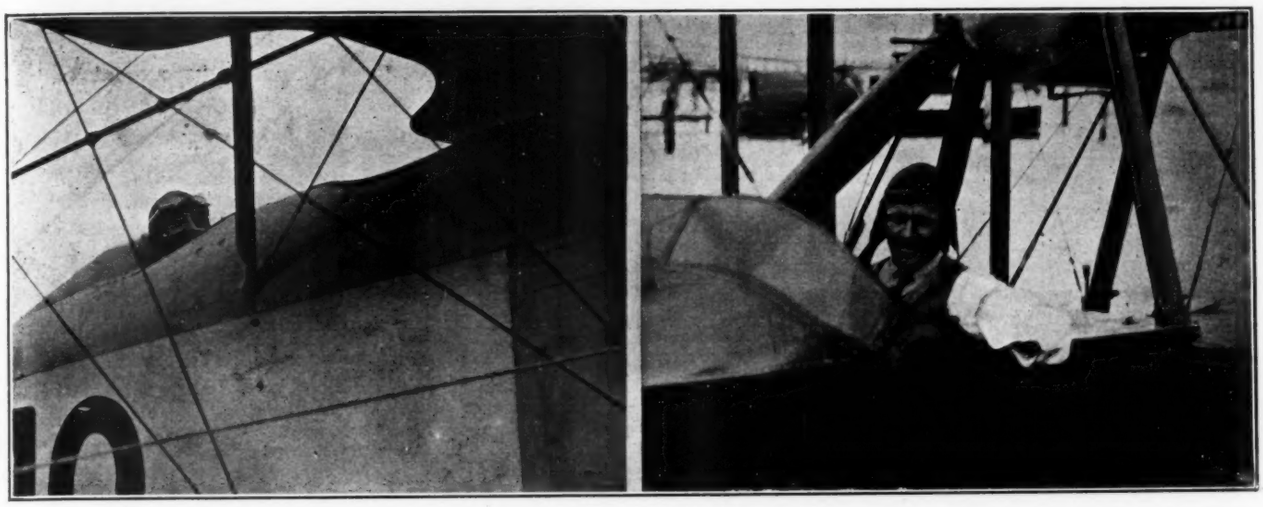
An interesting method of locating the bombs was used by the judges. This consisted of a rake with teeth upturned. Two of these were used, each being placed on shore at predetermined points separated by such a distance that the sighting line over the central pins in the rake cut the target through the center, thus forming a right angle with the target at the apex. A scorer and an observer were used at each of these locations, and as the bombs dropped the observer, sighting across the rake, called out the location, such as "left 3," "right 1," "right 2," etc. These were written down by the scorer, who also noted the number of the plane dropping the bomb and at the same time noting down the number of the bomb dropped by that particular plane.

After the bombing contest was finished the judges compared notes and sighting lines were drawn off on a map, and where these crossed a bomb location was indicated. In addition to these rakes, judges were stationed in the tower of the Flamingo Hotel and had a beautiful panorama of the entire event. These men were also supplied with target cards as a double check. The winners of this event were:

1st—Capt. E. E. W. Duncan and Lieut. H. A. Craig.
2nd—Lieutenant Harrell and Lieutenant Finch.
3rd—Lieut. Commander Ramsey and Lieutenant Compo.
4th—Lieut. H. L. George and Capt. R. B. Hough, Jr.
5th—Lieutenant Murphy.

In passing, it might be noted that all pilots used bombing sights with the exception of Lieutenant Murphy, whose hits at times appeared almost as close as those favored by the use of the sights. Standard 100 lb. bombs with the charge removed were dropped by the Army, the Navy using small sub-caliber 1 lb. bombs.

One of the Martin Bombers, which was to have been flown by the second crew of No. 14, which won the contest, developed engine trouble a few miles south of Palm Beach, Fla., en route to Miami and was forced to land, being unable, therefore, to compete with their own machine, which accounts for the fact that plane No. 14 was used twice by different crews.



Two winners of the Miami Air Races—Left. Lieut. V. F. Grant, U.S.N., in a VE7H (200 hp. Wright E3 engine), winner of Curtiss Trophy; right, Harry Rogers in a Curtiss Seagull (160 hp. C6 engine) winner of Miami Chamber of Commerce Trophy

Flamingo Handicap Trophy Race

Saturday, March 8

The prizes were as follows: First prize, Flamingo Handicap Trophy; second, third and fourth prizes, silver loving cups.

This marked the opening of one of the most interesting of all contests, a handicap race of 200 km. (124.27 mi.), eight laps of the 25 km. course, for Navy pilots only. The following were the entries:

Pilot	*Plane*	*Number*	*Engine*	*Hp.*	*Entrant*
Lt. Com. Ramsey and Lt. Compo	F5L	6	2-Liberty	2x360	U. S. Navy
Lt. Harrell and Lt. Finch,	F5L	7	2-Liberty	2x360	"
Lt. Martin and Lt. Keene,	F5L	8	2-Liberty	2x360	"
Lt. Richard,	HN2	9	Wright J1	200	"
Lt. Grant,	VE7H	10	Wright E3	180	"
Lt. Sprague	TS1	11	Wright J1	200	"

Promptly at 12:30 the first group of three F5L's took off on their course. The first lap was somewhat longer than normal in view of the fact that, due to wind direction, it was necessary to send the planes away from a standing start at their bases on the Miami Shore. Times were taken from the "gun" and handicaps were all figured from standing start. All planes took off and flew northeast to the Flagler Memorial, rounding this, and started away on the course. It was an inspiring sight to see the three F5L's take off side by side and approach the turn in this formation. The pilots of these three planes drew for pole location, and Lieut. Commander Ramsey and Lieutenant Compo were fortunate in winning and holding the inside turn on the initial get-away.

These planes had completed one lap of the course and were on the second lap when Lieutenant Richard in the HN2 was given the starting signal at the expiration of his handicap, which was 13 min. 48 sec. Unfortunately, his engine had been idling for a sufficient period to cause the motor to load up, and he was somewhat delayed in opening his motor and getting away.

Planes Nos. 10 and 11 were next lined up at their bases with engines running and received their starting signal at the expiration of the handicap for these two machines, which was 25 min. 12 sec. after the first starters. These planes took off together, rounded the pylon at the same instant, and were away on their course. Near the end of the second lap plane No. 10 was seen to land at the base on the Miami Shore and was reported out with a broken water lead. Plane No. 11, approaching a few seconds later, was seen to throw a considerable trail of oil, and Lieutenant Sprague immediately returned to his base and was reported out with the scavenger pump failing to clear the engine.

Near the second pylon on the final lap of the race, Lieut. Commander Ramsey and Lieutenant Compo, who were running second in the group of F5L's and third in the race, were flying too close to the water, down wind. The air was somewhat bumpy, causing the plane to touch the water while traveling at close to 100 mi./hr., and they were forced to land. Lieutenant Richard in the HN2 finished the race in 1:16:45.83, leading the last man by 20 min. 27.83 sec., and his nearest competitor by 19 min. 53.37 sec. The time for all planes was as follows:

1st—Lieutenant Richard, 1:16:45.83—97.05 mi./hr.
2nd—Lieutenant Harrell and Lieutenant Finch, 1:36:39.2—77 mi./hr.
3rd—Lieutenant Martin and Lieutenant Keene, 1:37:13.66—76.65 mi./hr.

The method of handicapping these planes was based on official Government acceptance tests, and handicaps were figured from a basis of 90 per cent of the maximum speed on a triangular course and included the time of take-off, etc.

Curtiss Marine Trophy Race

Saturday, March 8

The final event of the day was the Curtiss Marine Trophy Race. This race was against time for a distance of 200 km. (124.27 mi.), eight laps of the 25 km. course.

Cash prizes were as follows: 1st prize, $1,000; 2nd prize, $300; 3rd prize, $200.

The entries and order of start were:

Pilot	*Plane*	*Number*	*Engine*	*Hp.*	*Entrant*
Lt. Murphy,	HN2	9	Wright J1	200	U. S. Navy
Lt. Grant	VE7H	10	Wright E3	180	"
Lt. Sprague,	TS1	11	Wright J1	200	"
Lt. Harrell and Lt. Finch,	F5L	7	Liberty	2x360	"
Lt. Com. Mason,	CS1	12	Wright T2	520	"

All planes had a flying start on this event, the winner being the plane to complete the course of 200 km. in the shortest elapsed time. The first man away was Lieutenant Murphy at the stick of the HN2. After circling for altitude, he dove down from the southeast in a close turn of the first pylon and was off for the race. The second plane was the VE7H, No. 10, with Lieutenant Grant as pilot. He crossed the starting wires 2:20 and made a sharp but beautiful turn of the Flagler Memorial marking the first pylon. The next plane to cross the sighting wires was the F5L, No. 7, with Lieutenants Harrell and Finch at the controls. They started two minutes after Lieutenant Grant. The next plane away was the No. 11, the TS1 piloted by Lieutenant Sprague. He clipped across the starting line 46 sec. after the heavy F5L had rounded the turn. The next starter was Lieut. Commander Mason flying the CS1, racing No. 12. He started 3 min. after Lieutenant Sprague.

On the third lap Lieutenant Grant had overtaken Lieutenant Murphy and crossed the sighting wires one minute in the lead. On the fourth lap he had increased this to 2 min.; on the fifth lap to 3:15; on the sixth lap 4:18; at the end of the seventh lap he was 5½ min. ahead of Lieutenant Murphy and completed the race in 1:4:11.18, at an average speed of 116.1 mi./hr. It is interesting to note that Lieutenant Grant's plane was equipped with the latest type all-metal pontoons.

In the meantime Lieutenant Sprague in the TS1 was having difficulty. His engine had been completely checked over between his time of leaving the handicap race and the start of the Curtiss Marine Race at 3:30 p. m. Shortly after completing the second lap the scavenger pump began to fail, causing the motor to throw back a considerable stream of oil. Fearing that he had fouled the second pylon on the second lap, Lieutenant Sprague made a circle of the pylon and continued on his way. This increased his flying time for the second lap by 48.18 sec. With his motor constantly shooting oil, Lieutenant Sprague throttled down, feeling that by so doing he might be able to finish the race. This seemed to be proven by the fact that his motor ceased smoking.

Near the end of the sixth lap he pushed the throttle wide open and found that to all appearances his motor was operating perfectly, although the oil pressure gage was indicating zero, but the motor did not seem to be "revving" up properly. During this period Lieutenant Sprague had lost track of his laps and continued on a ninth lap, and finally, as he was seen approaching on a tenth lap, he was flagged down from the timers' stand. After landing, investigation showed there was no oil in the motor and approximately a quart of gasoline in the tank. This accounts for the fact that the TS1 completed the race at a speed of only 102.2 mi./hr., which is much below its accredited speed.

The winners were as follows:

Place	*Pilot*	*Time*	*Speed*
1st	Lieutenant Grant	1:4:11.18	116.1 mi./hr.
2nd	Lieutenant Sprague	1:12:39.14	102.2 mi./hr.
3rd	Lieutenant Murphy	1:12:59.57	102 mi./hr.
4th	Lieut. Commander Mason	1:29:23.65	83.3 mi./hr.
5th	Lieutenants Harrell & Finch	1:31:41.37	81.3 mi./hr.

The Miami Chamber of Commerce and the National Aeronautic Association were warm in their praise of the cooperation of the Naval Bureau of Aeronautics and the Army Air Service for their assistance in making the meet a success.

Wright Aeronautical Earnings

The Wright Aeronautical Corp. for the year ended Dec. 31, 1923, reported net income of $326,582 after charges and Federal taxes, equivalent to $1.31 a share earned on 249,390 shares of no par common stock. This compared with $523,431, or $2.33 a share earned on 224,390 shares in 1922.

F. B. Rentschler, president, told stockholders that the company on January had business on its books totaling $2,094,135 and has since received additional orders amounting to $237,984. As this new business is for types of engines already in production, better results are expected this year than last.

The company manufactured and shipped last year aeronautical equipment amounting to $2,226,891.

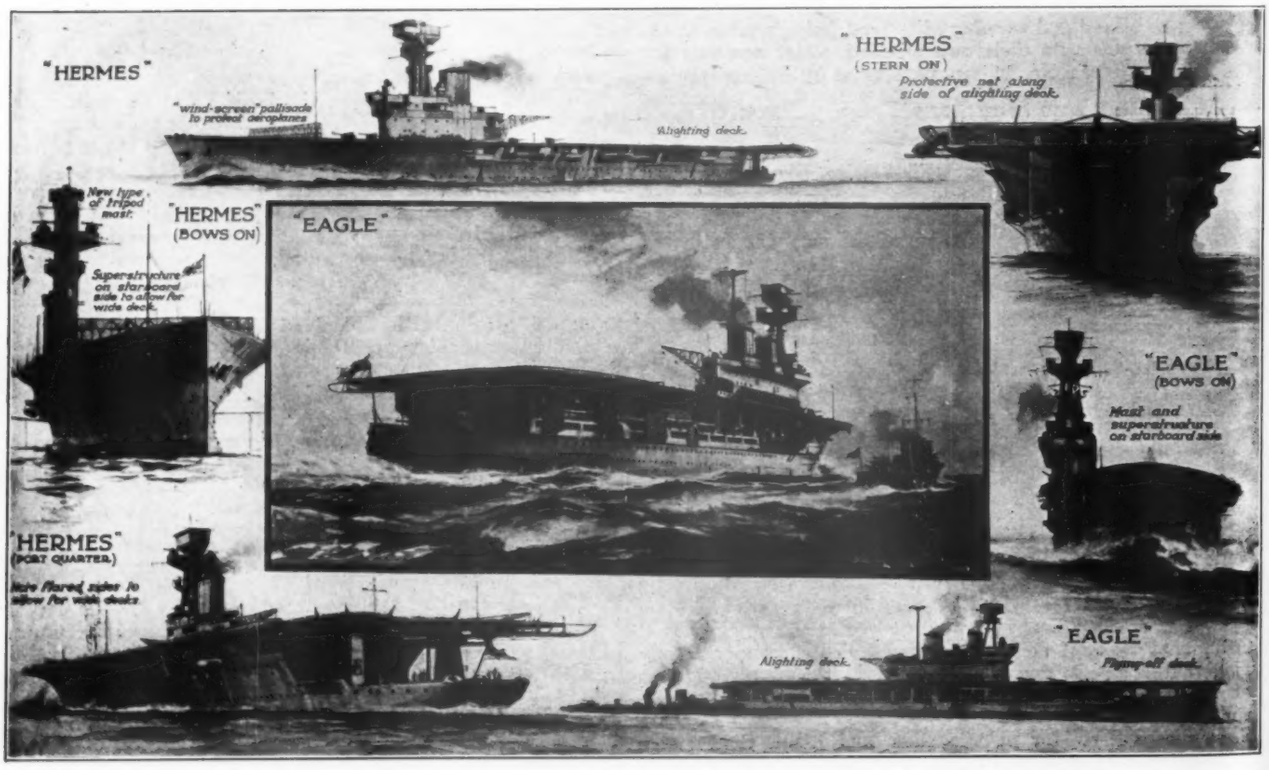


Photo Wide World

The two latest British aircraft carriers—H.M.S. Hermes and Eagle—which have recently been commissioned. Great Britain has six modern aircraft carriers as against one for the United States

Boston Airport and Coast Defense Policy

By PORTER ADAMS

Chairman, Boston Municipal Air Board; Vice-President, Naval Aviation Association

Line officers of the Navy generally concede that any coast defense plans for a future war in the Atlantic must provide for the use of Army and Naval aircraft working together with the coast artillery, and all officers familiar with the recent work at the Naval War College have been surprised at the amount of attention given to use of aircraft, in the regular and correspondence courses. It is for these reasons that the new Boston Airport offers the Navy a great opportunity to practice and perfect its air force in accordance with latest methods.

Army Actively Interested

The Boston Airport is situated at East Boston, less than 15 min. away from the center of Boston by electric car. The construction of this field has been shared in by the Federal, State and City Governments, as well as contributed to by individual citizens. The land is owned by the Commonwealth of Massachusetts, which also appropriated $35,000 toward its improvement. The water supply was installed by the City of Boston, and the Boston Chamber of Commerce raised more than $13,000 by public subscription to add to the State appropriation. A portion of the land is leased to the United States Army for a period of ten years, at an annual rental of $1.00 per year with the provision that the Army "shall permit under suitable regulations full use of said field by commercial and civil fliers." It is further provided that additional land adjoining may be leased under suitable provisions to the Navy, the Air Mail and to individuals and corporations.

The Army has been quick to take advantage of its opportunity. Already two large hangars have been erected, two more are under construction and the first Army plane landed there on June 5, 1923. The official opening took place on Sept. 8, and the field is now in constant use.

In addition to being the headquarters of the regular Air Service of the First Army Corps Area, this field is the headquarters of the 101st Observation Squadron of the Massachusetts National Guard and the 319th Observation Squadron of the Organized Reserves. It is expected that in the near future the Regular Army will maintain Pursuit, Bombing and Photographic Squadrons at this location.

Aside from any military advantages, the Army Air Service is especially pleased with the Boston Airport because of the chance that it offers for the development of civil and commercial aviation. The Air Service, with a far sighted policy, promotes civil aviation wherever possible because it realizes that in the long run it is only through commercial aviation that public interest and support of aeronautics may be maintained. The Navy, up to the present time, has not shared in this attitude, although a well known commercial company operating in the United States today confines itself exclusively to the use of Naval type flying boats in all its services. However, it is almost certain that if the Navy operates from East Boston, it will do much to increase interest and popularity in the construction and operation of naval types of aircraft by civilians and commercial companies.

Strategic Position of Airport

Joint Navy and Army air operations are vitally necessary in any adequate coast defense policy. Considered metropolitanly, Boston is the fourth largest city in America. Its strategic position in event of operations on the Atlantic Coast is second to none. Its airport is just within the ring of the major forts guarding Boston Harbor. Therefore, range or spotting operations in conjunction with the Coast Artillery could be carried on effectively. The main channel to the Boston Navy Yard with a dredged depth of 35 ft. passes directly by the Airport. Across the Harbor is the Army Base, the largest equipment storehouse in the world and alongside the Army Base is the Navy Dry Dock, which is the only dry dock in North America capable of handling the Majestic and the Leviathan. In all probability this is the dock which would be used for repairs on either the Lexington or the Saratoga, as well as the larger units of the fleet and any subsequent aircraft carriers which may be constructed.

It is less than an hour's steaming from the Airport to the open sea and 90 min. away by air to the Rockland trial course where the new cruiser Detroit recently established a world's record for vessels of her type. Forty minutes by air in opposite directions are Provincetown and Portsmouth, the former being the summer base for submarines operations and at the latter the Portsmouth Yard where the new fleet submarines are now under construction. Less than an hour away by air is Newport where, as previously mentioned, the Naval War College is devoting much attention to air tactics and strategy. By the maintenance of a Naval Air Station at Boston it would be possible for the officers at the College to get actual experience in all phases of the practical use of aircraft. Also, each year the Navy Department sends to the Massachusetts Institute of Technology numbers of Naval Academy graduates to take the course in Aeronautical Engineering founded by Comdr. J. C. Hunsaker, U.S.N., and now carried on by Prof. E. P. Warner. The advantage that it would be to these men to be able to observe and operate the latest types of Naval aircraft would be of great value in combination with the theoretical work at the Institute.

Ideal for Naval Air Activities

It is, also, at the present time a very debatable question whether or not five years hence the Naval aircraft register will contain a majority of land or water type of aircraft and it is almost a certain fact that the Naval aviator of the future will be required to operate both types with equal skill. The Boston Airport offers an opportunity for training in, and the operation of, all types of aircraft including lighter-than-air, while its position in the harbor makes it an almost ideal location for cooperation with carriers.

Last, but by no means least, of the advantages of the Airport is the occasion that it offers the Navy and the Army Air Service to know each other and to work together. It is a regrettable fact that sometimes in the past a complete spirit of comradeship between the sister Services has not existed. This has been caused by the fact that the two Services with few exceptions have never known each other; but in every case where they have acted together, it has led to mutual admiration and respect. If the Navy establishes an air station at the Boston Airport at this time, the Navy and the Army would, from the beginning, have an opportunity to work side by side; to attack the same problems, overcome the same difficulties, and establish a spirit which would be of inestimable value to the morale and future of both services.

Japanese Airship Burns

A small nonrigid airship of the Japanese naval air service, the name of which is not given, caught fire on March 19 over Ibaraki prefecture and fell to the ground killing its commander, Lieutenant Takahashi and a crew of four. All the victims were awarded posthumous decorations, and the commander was promoted to rank of lieutenant commander. The cause of the accident has not yet been determined.

(Ibaraki prefecture, or county, includes the Japanese naval air base of Kasumigaura, where all landplane and lighter-than-air training is conducted.—EDITOR.)

New Italian Wind Tunnel

The Italian Air Department has completed the construction of a high speed wind tunnel in which scale models of airplanes can be tested in air speeds up to 300 mi./hr.

LIGHT PLANES AND GLIDERS

Edited by Edmund T. Allen

Status of the Light Plane

The world of aviation in America now looks upon the light airplane with a consideration that has with miraculous and no less mysterious haste, suddenly become serious enough for the great manufacturing interests to propose their light plane entries in the tenth—and possibly the most important—event in the Dayton Air Races to be held next October. The light plane has passed, therefore, from that amateurish chrysalis under which the British have once gone so far as to term the light airplane a "temporary obstruction." It was while the light airplane was still in the domain of the amateur, however, that it achieved its crucial value. That event occurred in 1923 at Lympne Light Airplane Competition. In American aviation the coming Light Plane Air Derby—which may be announced shortly from Philadelphia—will probably occupy, at least in the historical sense, a similar position.

Genesis of the Light Plane

Before that important event in British aviation, the light airplane was growing, perhaps without much definition of aim, merely as one of those potentialities of what was at one time called a "motorless glider." For, in its present phase, the light plane is a development of the experiments in natural flight. At each of the three international soaring meets at Clermont-Ferrand, at Gersfeld, and at Itford, there was a provision that the machine must be without equipment for external power. In fact the rules provided that this must not read to cover any mechanism for using the muscular exertion of the pilot. This was, in effect, an invitation to the introduction of man-power machines. Man-power flight is not impossible, but any mechanism for it can probably be only an aerodynamic eccentricity, and therefore quite outside the reach of usefulness. To general aviation, the admission of man-power flight was temporarily important, for the provision recognized and pointed out that it is possible to fly with very low power, provided the machine is constructed with light loading, and that it is designed with sufficient refinement.

The genesis of the light airplane in its present development lay in the need of a small motor for auxiliary power in the machines at the European glider meets of 1922. Pilots again and again expressed their desire for a tiny, two or three horsepower motor which they might even hold up before them for use when the rising current failed. Such a motor would give a tractive force of from 30 to 40 lb. pull, sufficient to fly such a heavy machine as the Hannover Vampyr. The next step was the logical one: the addition of a built-in auxiliary motor to be used when the rising current dies down. But the force available was not as yet great enough for taking-off or for climbing. To climb required as much horsepower again. Then when the third demand for another increase in power came, in the need for a small reserve, the increase was made, and there was accomplished what was not far from the contemporary stage of the light airplane.

It may be well to exclude from a comprehensive definition of the light plane the early attempts of the Wrights, since, from the point of view concerning power ascendent in those days, an engine greater than that of their 14 hp. motor would have been used, had there been one in existence.

To formulate a status makes necessary some attempt at definition and perhaps the effective way to define the contemporary light plane is to exclude some types that seem to possess its salient characteristics. The "sport machines" developed immediately after the war were not light planes. The Sperry Messenger is not a light plane. The Mummert with less than half the power and twice the performance is a light plane. The Baby Avro is not a light plane. Why? Mr. Chadwick, who designed and pilots it, can be heard demanding satisfaction. One must know the criterion for judgment. Well, the basis for judgment is simply the tendency which I have tried to outline as a development from the glider outbreak. And here a whole chorus of his brother anti-gliderists in America would take their cue from him: "And what did we learn from the glider experiments? Nothing that we did not already know." It is possible that this is true. But those experiments were of great value to aviation in general to point out new relationships of what was in danger of becoming aeronautical dogma. One of these was aspect ratio. Gliding and the light plane have had an influence on aviation in the readjustment they have demanded upon the accepted relationship of aspect ratio to weight. The vicissitudes and expense of aeronautical research leave the value of aspect ratio, as yet, however, subjected to some extent to opinion.*

What is a Light Plane

What is the light plane? Is it a plane with a motor of less than 750 cu. cm. or less than 1100 cu. cm. or less than 1500 cu. cm.? For these three limits were placed on the two English and the French light plane competitions respectively. Is it a plane with a total weight of less than 600 lb.? This has been suggested as a limitation. Is it a plane that flies 80 mi. on the gallon of gasoline? If there are to be two-seaters, why not three- and four-seaters?

Probably we are watching not the perfection of the type, but rather, the items in its tendency. What seems to be happening in aeronautical design is the merging of two tendencies: the one enforced by the demand for an increase of performance and carrying capacity in the light plane, and the other by the need of economy, low first cost, lightness, simplicity of handling and housing on the part of heavy design.

The light plane will make a profound deflection upon aeronautical design in the direction of its unique characteristics. It is to be hoped that the tendencies will not coalesce too rapidly, since it might be said that certain interests have not wished the light plane a long status as a separate entity.

The British light plane has risen in competent opinion by each meet and test, and has, as it were, gotten into the peerage of official favor, since it has achieved already the exalted and permanent dignity as a training machine for reserve pilots in the Royal Air Force. The Air Ministry found that many thousands of pounds would be saved by using light planes for this purpose for it proved at the competition to be quite as controllable, quite as maneuverable, quite as stable, and therefore quite as safe as the heavier and costlier type, in addition, of course, to all its other advantages.

*See British Advisory Committee, "On Aspect Ratio Experiments."

Low Power Flying

Some interesting points about the light plane were brought out in a paper of the above title which was read by W. O. Manning before the (English) Institution of Aeronautical Engineers on March 22, 1924.

After discussing the general idea which determined the design of the successful Wren light plane, the lecturer considered some of the results obtained at the Lympne light plane meet last October. He said that where an adequate rudder is fitted, ordinary practice in the design of ailerons and elevators seems to provide adequate controls in these small machines. In one respect the light airplane has shown a valuable quality in that owing probably to the large degree of lateral damping there was no tendency to drop one wing suddenly when stalled.

Mr. Manning was of the opinion that it was advisable to keep to the two cylinder engine as far as possible, owing to the simplicity of the type and the ease with which it can be overhauled. The objection that failure of one plug seriously reduces the power available was equally true for any engine that could be used and the more cylinders the more chances of plug failure.

A water-cooled engine and wing radiator might allow a cleaner design than the air-cooled type, but it was doubtful whether the extra complication and weight would be worth the possible gain.

Small Diameter Propellers

The use of small diameter directly-driven propellers at Lympne had been a source of astonishment, particularly to French visitors, who found it difficult to believe that any appreciable efficiency could be attained. However, where geared-down propellers were used at Lympne it was probably done with a view to getting the maximum power from the engine. The small high speed propeller has the advantages of low weight and simplicity; it also allows the cutting down of ground clearance and saved under-carriage resistance. As a general rule, where two alternate methods of doing anything offer advantages so evenly balanced that it is difficult to decide on their merits, the simplest should be adopted.

The weight of instruments for small machines deserves consideration, the lecturer said. The speed indicator on the Wren weighed slightly more than the engine mounting. Very much lighter instruments could and should be provided and larger machines would benefit thereby.

From 1913 to 1922 there had been practically no improvement in the aerodynamic efficiency of airplanes, the improvement in performance being due to the greatly improved engines. Although the possibility of improving the airplane had occurred to several people in this country it was only when the German glider trials and their results became known that these ideas took concrete shape. The glider trials at Itford showed the possibility of improvement and last year's Lympne meeting produced machines which showed marked aerodynamic improvement over everything previously built in England.

An Important Result

The immediate result was that it was now possible to produce a training machine which in first cost, cost of maintenance, of fuel and of oil could save the Royal Air Force many thousands a year. The principal object of this year's competition was the development of such machines.

At present the efficient types of machine, such as were seen at Lympne, can only be built in small sizes as the structure weight would become excessive in large machines. The author had no doubt that in time commercial machines of 10,000 lb., with a speed of 100 mi./hr., loaded to 40 lb./hp., would be constructed.

Mr. Manning did not agree with the school of thought which held that experiment with pure gliders was the right method. In the glider *L/D* was important alone and weight did not matter. The tendency would be to improve this by using enormous aspect ratios, which meant heavy weight.

Needs of the Light Plane

A Letter from Glenn D. Angle

Editor, AVIATION:—

The letter of Mr. A. Wellington Cook with reference to the needs for light plane engines in the March 3 issue of AVIATION is deserving of comment. I quite agree with Mr. Cook in that a series of low powered airplane engines at attractive prices are necessary in order to build up a light airplane industry; however, I do not agree with him in his selection of types.

The air-cooled engine with cylinders arranged in one plane is undoubtedly the best suited for sport airplanes, or for light commercial airplanes requiring outputs up to 200 hp., but apparently not for outputs much in excess of 200 hp. for many obvious reasons. It is true that the torque characteristics of an engine are improved as we increase the number of cylinders, but this is by no means the only consideration. The balance and the weight of the engine are equally important factors and I think when all these are considered, the best suited types are as follows.

Up to 30 hp., an engine with two cylinders horizontally opposed is best suited. For outputs of twice the horsepower, that is, from 30 to 60 hp., four-cylinder engines made up of a combination of two of the above offer great possibilities. For outputs from 80 to 120 hp., the five-cylinder radial type appears to offer the best advantages. In the above I have totally disregarded the three-cylinder radial type for the reason that it is not well balanced, and it does not possess the features that a four-cylinder engine which is made up of two of the two-cylinder engines may have. Briefly, the latter is a double form of any existing two-cylinder horizontally opposed type, with cylinders incorporated on one crankcase and driving a central propeller shaft through reduction gears. This permits the designer to obtain any desired speed reduction for the propeller, and it also locates the cylinders in one plane so that they are all cooled equally well by the air blast.* The latter idea is due to Mr. Morehouse who recently designed a two-cylinder light-plane engine. This was recently described in one of the late issues of AVIATION.

To further substantiate my claims for the two-cylinder horizontally-opposed engine for types up to 30 hp., I can do no better than quote from the paper by W. O. Manning on "Low Powered Flying," an abstract of which appeared in the Feb. 28 issue of *Flight*. Mr. Manning will be known as the designer of the Wren light plane which made such a creditable showing in some of the recent contests abroad, and he should therefore be in a position to give an authoritative opinion on light plane requirements:

> "I think, personally, that it would be advisable to keep to the two-cylinder engine as far as possible. This engine has the advantage of extreme simplicity, and can be overhauled, the valves ground, cylinders cleaned, etc. at very small cost.
>
> "An objection one sometimes hears to the use of this type is, that if one plug fails a large portion of the power vanishes, but this is equally true of any small engine which is likely to be fitted in such machines. Such engines are not likely in any case to have a greater number of cylinders than four, and as a counterpoise to the above, it is clear that as there are twice as many plugs in the latter engine as there are in the two-cylinder type, the risk of failure of one of them is twice as great. In a small engine of this type the irregularity of torque does not seem to have an appreciably detrimental effect on the propeller, and I think that it would be quite possible to drive a propeller satisfactorily on a single cylinder only."

Experience so far with the Morehouse engine has been quite conclusive in so far as its smoothness of running. At speeds up to 3600 r.p.m., no excessive vibration could be observed. It was possible to idle the engine down to 250 r.p.m. for 5 min. with only a 24 in. diameter duralumin fan (weight 3.4 lb.) acting as a flywheel. With only ⅝ in. separating the cylinder axes, the couple exerted is too small in magnitude to cause any noticeable vibration. Apparently, there is no need for concern on the score of torque unevenness in this engine from the idling test referred to above.

I further believe that a pilot will try for a landing with an engine of less than five cylinders whenever any one cylinder cuts out, and we can therefore make no substantial claims as regards reliability for engines of three or four cylinders in comparison with the two-cylinder horizontally opposed type.

GLENN D. ANGLE
March 17, 1924.

*Foreign experience does not seem to bear out this statement. In the case of French air-cooled engines built with double rows of cylinders (160 hp. Gnome, 200 hp. Anzani, in particular) it was invariably found that the rear row of cylinders did not cool as well as the front row because the latter shut off part of the air stream.—EDITOR.

Ansaldo Light Plane

The Ansaldo firm of Turin, Italy, is building a light plane which will be equipped with a 40 hp. Ansaldo automobile type engine. The little ship will be a two-seater biplane. The designed full speed is 90 mi./hr.

AIRPORTS AND AIRWAYS

Philadelphia News

By Robert P. Hewitt

The weekly Tuesday Noon Luncheons held by the Aero Club of Pennsylvania continue to draw those active and interested in aviation. This practice, inaugurated last year, has proven an excellent opportunity for frequent informal gatherings.

W. Wallace Kellett is abroad in the interest of the H. & M. Farman Co. of France, and other business connections.

Capt. Harry C. Drayton of Mitchell Field, flew down to Philadelphia on March 1, to visit C. T. Ludington. The Captain landed at the field of the Aero Service Corporation at 73d and Island Road, Philadelphia.

Capt. "Vic" Dallin of the Aero Service Corp. has been flying his Laird frequently this winter on photographic work.

C. T. Ludington sailed for France on March 12. He plans to return in April, bringing with him a new Farman "Super Sport" to enter in the Dayton Races. While in France, he will visit the factory of the Barbier, Benard & Turenne Co., manufacturers of operating lights and also landing field lights. Their landing light was recently tested out at Mitchel Field and very effectively illuminated practically the entire field.

The Philadelphia Unit of the Reserve Air Service, 79th Division, under the command of Maj. Wm. D. Grant, is now well established, having fifty-five officers. A divisional dinner will be held at the Bellevue Stratford Hotel on the evening of April 12. Lieut. James A. Mollison, Executive Officer, is receiving applications for commissions in the Reserve Unit and those interested should get in touch with him at the Quartermasters Depot, Schuylkill Arsenal, 2620 Grays Ferry Rd., Philadelphia.

Recruiting has been started for the newly organized 103d Observatory Squadron of the Pennsylvania National Guard.

Temporary headquarters have been established in the First Cavalry Armory, 32d st. and Lancaster av. The organization will be commanded by Lieut. John Sydney Owens, Glenside, who brought down eight German planes in the war. Its full strength will be eighteen officers and sixty-five men. Arrangements for a flying field have not been completed but it is expected one will be obtained within thirty minutes of City Hall by trolley.

"The squadron offers an excellent opportunity for real flying," said Lieutenant Owens. "Only one ground officer will be required. There is need for airplane riggers, mechanicians and engineers."

Those who enlist will be required to attend weekly drills and a meeting at the armory once a month. A summer camp will be held, possibly at Langley Field, Va. Twenty-four of the sixty-five men required will be non-commissioned officers.

Two second lieutenants have been commissioned. They are John Herford Batty and William H. J. McIntyre, both of Philadelphia.

Hearings on the Winslow Bill

The Aeronautical Chamber of Commerce is advised that the special Sub-committee on Aviation of the House Interstate and Foreign Commerce Committee will very shortly hold public hearings on the Winslow Civil Aeronautics Act (H.R. 3245).

This Bill provides for a Bureau of Civil Aeronautics in the Department of Commerce, to be administered (under the secretary) by a Commissioner of Aeronautics. It proposes to regulate as an element of interstate commerce the operation of every civilian flying machine in the United States and possessions, all civil flying and all air navigation facilities. The act carries amendments to the navigation laws, to the Tariff, Public Health, Immigration and the Narcotic-Drug Acts, the Criminal Code, etc.

No flying machines may be operated until it has been registered and certified by the Bureau as being airworthy. Provisions are made for admitting aircraft under foreign registry. All aircraft shall be marked so as to make indentification easy. All civilian air navigation facilities, airdromes, routes, etc. must have a certificate as to their suitability for the purpose intended.

No persons who have not qualified by examination will be certified to pilot aircraft. Only those possessing such certificate from the Bureau will be permitted to operate or pilot aircraft. A logbook or detailed account of all operations must be kept.

Fines and penalties are provided for violations. The Secretary of Commerce is authorized to designate and approve all public and commercial air routes, and to maintain them adequately whether they are owned by the Federal Government, State, or municipality. Maps shall be made available along with periodic reports giving in detail all information relating to civil aviation.

Government airdromes, such as those operated by the Army, Navy, and Air Mail Service, are authorized to sell to civilian aircraft alighting there such equipment and supplies as may be necessary to aid them in continuing on their way to the nearest private or public field.

The President is authorized to prescribe reserved air spaces for public safety or national defense; and over these spaces civil aircraft may not fly without special authority. The measure literally makes all civil aircraft subject to regulation when engaged in interstate and foreign commerce. The Bureau of Civil Aeronautics will have full administrative powers and may invoke the aid of the courts in carrying out investigations, penalties, etc.

St. Louis Races Financial Statement

The St. Louis Aeronautic Corp., in its statement to stockholders, shows that a balance of $13,716.74 is in its treasury, after meeting all the expenses connected with the International Air Races held last October.

The corporation has not acquired the flying field, known as Lambert-St. Louis Field, as it hoped and planned to do before the races. It has a lease on the field, which expires in 1936.

It is now planned to use the balance as a first payment on the purchase of the field, and plans for meeting the balance of the cost are being considered. The holding of civilian air meets has been suggested as a means of raising further funds.

Rain, which caused postponement of the races from the first to the latter half of the week of Oct. 1 last, and which made necessary large expenditures for grading and draining, defeated the plan for immediate acquisition of the field. The corporation owns the improvements on the field, including the hangars and stands.

The statement lists funds acquired at $329,133.14, against funds expended of $315,416.40. Listed under funds acquired are stock subscriptions, $171,225.00; ticket sales, $138,319.78; program and entry fees, $152,033.08; and miscellaneous, $5875.06.

B. F. Bush is president of the corporation, and W. Frank Carter and Carl F. G. Meyer, vice-presidents.

New Orleans Wants Seaplane Port

The New Orleans Association of Commerce has recommended to the Planning Commission of that city to establish a chain of islands on Lake Ponchartrain to form a protected harbor for seaplanes. The plan includes the creation of an area of from 50 to 100 acres to be used for land and sea plane hangar facilities.

The plan has received the approval of the National Aeronautic Association, to which it was submitted.

France Honors Frank S. Lahm

Frank S. Lahm, vice-president of the International Aeronautic Federation, and long a resident of Paris, France, has been awarded the decoration of the Legion of Honor by the French government in recognition of his long and valuable services in the advancement of aeronautics.

Mr. Lahm has been a member of the Aero Club de France since 1900, and for a number of years a member of its governing committee. He was one of the first to recognize the importance and the future possibilities of aircraft, not only as a matter of national defense, but as an economic factor in the development of transportation throughout the world.

Frank S. Lahm

Mr. Lahm's interest has not been academic. After the necessary training he was granted his balloon pilot's certificate in 1905, has made numerous ascensions, and successfully taken part in many of the balloon races held by the Aero Club de France.

In 1903 when the first reports of the Wright Brother's flights were circulated, he cabled to the United States and had verified the claims that had been made. He then published them to the world and thus aroused the first interest in their work which served to stimulate the French in their early experiments with heavier-than-air machines.

Mr. Lahm was in this country when the United States entered the World War and at the request of the Air Service came to Washington, when he was asked to assume the responsibility of organizing the lighter-than-air service which was to form part of the United States effort in the great war. He felt, however, that a younger man should be put in charge (he was over seventy years of age) but he accepted a position as technical advisor and served as such until after the Armistice.

Mr. Lahm has always taken a keen interest in all branches of aeronautics and was the first to fly with Wilbur Wright in France in 1908. Later flights include with his son in the Philippine Islands in 1912, over Coblenz after the occupation by the American troops and more recently over the Panama Canal at the time of trip through Central and South America where he was studying the development of aeronautics.

Rowe Fliers Move to Hasbrouck Heights

Basil L. Rowe, who formerly carried on the business of the Rowe Fliers at Binghamton, N. Y., is now located at Hasbrouck Heights, N. J. Besides handling the sale of motors, planes and spares, the Rowe Fliers are engaged in advertising, instruction, photography, transportation and exhibition work.

Italy Prepares for Schneider Cup

Italy is methodically preparing for the Schneider Cup race which will be held Oct. 24-25, 1924, at Baltimore. Four firms, it is understood, are preparing designs for the Italian challengers, namely, Piaggio, Macchi, Dornier and the Cantieri Navali Monfalcone. Piaggio recently produced a single-seater pursuit plane which made a high speed of 181 mi./hr. and it is believed that this plane will be entered in the Schneider race fitted with floats. Macchi and the Italian Dornier works are designing monoplane flying boats for the race, while the new Monfalcone firm expects to produce a biplane flying boat to the designs of Signor Conflenti. The latter was originally chief engineer of the Savoia firm—which will not compete this year in the Schneider Cup race—and later joined the French C.A.M.S. company. His work as the designing head of a new Italian aircraft firm will, therefore, be interesting to follow.

The Italian team for the Schneider Cup race will consist of four planes, one of which will be held in reserve, as was the case with the American team last year.

It is said that all the Italian Schneider Cup challengers will be equipped with Curtiss 12A engines of 500 hp.

What Stopped Macready's Flight

A recent report from the McCook Field states that the failure of Lieut. John A. Macready's airplane on his latest attempt to regain the world's record was not due to the supercharger fitted to the engine. The General Electric Co. has received word from E. T. Jones, chief of the power plant section of the Air Service Engineering Division, stating that the supercharger, invented by Dr. S. A. Moss of the General Electric Co., worked perfectly throughout the flight and that an examination after Macready landed revealed no damage.

According to the report, "a broken cam follower, which rapidly wore down during the flight, kept reducing the amount of the exhaust valve opening on the No. 1 cylinder until, at the end of the flight, the exhaust valve was entirely closed. This was, of course, the reason why an altitude of not higher than 41,000 ft. was reached."

While plans are being made for another flight in hopes of regaining the record now held by Sadi Lecointe of France, the report states no definite steps have as yet been made.

An Important Amendment

The Air Service Engineering Division advises that the following amendment is made in Circular No. 2453, dated Feb. 5, 1924, inviting submission of Two-Seater Corps Observation Airplanes and proposals for their sale to the Government:

"In view of the advances being made in the design and construction of motors, it is possible that a new motor of adequate power may at any time be available. The Air Service reserves the right to permit the substitution of such new motor, if a request to that effect is submitted by any designer whose design is chosen as among the best four submitted. Such engine must be of a compression ratio suitable for operation on straight aviation gasoline, as the engines now available to be furnished by the Government will comply with this requirement."

Beardmore Resumes Aircraft Construction

The British armament firm of William Beardmore & Son, Ltd., which supplied numerous military planes to the Allies during the war of 1914-18, but discontinued aircraft construction after the Armistice, has now resumed this branch of its activities.

It is rumored that Beardmore is attempting to obtain a license from Dr. Rohrbach for the construction of the latter's metal airplanes, which are now produced in Denmark. Dr. Rohrbach designed among other planes the four-engined Zeppelin-Staaken giant monoplane. The Beardmore company has, besides, under development a heavy-oil engine for aircraft.

Fiat 800 hp. Engine

The Fiat Company of Turin, Italy, recently completed the construction of a new aircraft engine which is equipped with a supercharger. The engine is said to develop 800 hp.

UNITED STATES AIR FORCES

U. S. ARMY AIR SERVICE

Three Army Entries for Balloon Race

The Army Air Service has entered three teams in the National Elimination Balloon Race which will start from San Antonio, Tex., April 23. The following have been designated:

Team No. 1—Maj. Norman W. Peek, A.S., pilot; 2nd Lieut. R. E. Robillard, A.S., aide.

Team No. 2—Capt. Edmund W. Hill, A.S., pilot; 1st Lieut. James F. Powell, A.S., aide.

Team No. 3—1st. Lieut. Ashley C. McKinley, A.S., pilot; 1st Lieut. Lawrence A. Lawson, A.S., aide.

Alternate Pilot and Operations Officer:—1st Lieut. Max F. Moyer, A.S.

The San Antonio Aeronautical Association offers a gratuity to each pilot in the Race who breaks existing records for distance. A gratuity of $125 is to be given to the pilot breaking the existing American record, and additional gratuities of the same amount will be given to each pilot breaking the present world's record. Six prizes ranging from $1,000 for first place to $100 for sixth place will be awarded to the balloonists finishing in the first six places.

In 1922 Maj. Oscar Westover, A.S., in a flight of 850 mi., landed in the province of Quebec, Canada, outdistancing his nearest competitor by over 300 mi. Last year a hard fought contest was won by 1st Lieut. Robert Olmstead, A.S., who landed in the vicinity of Buffalo, N. Y., with a lead of over 100 mi. on the Navy pilot, Lieutenant Lawrence.

The winners of the first three places in the Race this year will be designated to represent the United States in the Gordon Bennett Balloon Race which will start from Brussels, Belgium, about June 15, next.

In anticipation of landings being made in Canada or Mexico, by starters in the National Balloon Race, the Contest Committee of the N.A.A. has requested Secretary of State Hughes to bring the subject to the attention of the proper authorities of those countries. This is done in order that landing may be made without the necessity of paying duty.

Courtesy of the customs officials on the borders has also been requested of Secretary of Treasury Mellon, so in case of landings beyond the United States line, the balloonists may return to this country without the payment of duty.

The Canadian Air Board has been informed of the possibilities of landing in that country, and told that courtesies extended the pilots will be appreciated by the association and participants in the races.

Commended for Conspicuous Conduct

Capt. Anton Heinen, pilot of the Navy airship Shenandoah on her breakaway flight, has written the following letter to Lt. Col. Chalmers G. Hall, formerly commanding officer of Scott Field, but now taking rigid airship training with the Navy at Lakehurst, N. J., commending the conduct of Staff Sergeant Olin Brown, A.S., who was aboard the airship on that flight:

"I take the greatest pleasure in writing you about the splendid man, Sergeant Brown, who was on board the Shenandoah during our storm flight on Jan. 16. I had no chance to see and watch him before that time, and hear that he had no experience on the wheel of a rigid airship before that time. I admire the way he was on the job during the most trying time we had to go through. His calmness, his unceasing attentiveness and cheerfulness made him one of our most valuable assets during the flight, the more so as we had no relief for him, except myself, that we had to depend on his loyalty, and even his bodily resources more than could be justified under other circumstances.

"I sincerely believe that he deserves all the advantages that might come as a reward out of this trip. One thing I can personally say is that he certainly need not pass any more examinations or bring more ample proof as to his ability to fill in a position on a rigid airship.

"I am glad to write this letter, recommending a member of your force, so much to the credit of it."

Sergeant Brown was trained in the Balloon Observers School at Ross Field, Arcadia, Calif., and at the Airship School at Langley Field, Va. He is a 2nd Lieutenant in the Air Service Reserve and has been on duty in the Engineering Department at Scott Field and as a flight instructor in one-man ships. He is one of the noncommissioned officers of the Air Service taking training at Lakehurst, N. J.

Army Orders

Three months' leave to First Lieut. Leroy E. McGraw, A.S., on arrival in U. S., with permission to apply for one month's extension.

First Lieut. John Y. York, jr., A.S., to Balloon and Airship School, Scott Field, for training, on completion present foreign service tour, by orders to be issued by C.O., Philippine department.

Leave of absence First Lieut. Frank W. Seifert, A.S., extended five days.

First Lieut. Graham M. St. John, A.S., to Brooks Field, on completion present foreign service tour, by orders to be issued by C.O., Philippine department.

Sec. Lieut. James E. Gardner, A.S., now station hospital, Fort Sam Houston, to proceed to his home and await retirement for convenience of government.

First Lieut. Walter J. Reed, A.S., Naval Air Station, Lakehurst, to Langley Field.

First Lieut. Shiras A. Blair, A.S., on completion temporary duty orders Feb. 25, to A.S., Philippine department, Manila, by transport sailing San Francisco Aug. 1.

Following named enlisted men, A.S., to Primary Flying School, Brooks Field, for appointment as flying cadets: Pvts. John L. Muirhead, Earl Potts, and Pvt. 1st cl. Harold E. Raiter, Bolling Field; Sgt. Edward J. Quigley, Pvts. Elmer F. Beckstrand and Charles A. Rublee, jr., Langley Field; Pvt. Perry K. Galvani, Maxwell Field; Pvt. 1st cl. Omar W. Peters and Pvt. Charles C. Coppin, jr., Fairfield air intermediate depot; Sgt. Douglas M. Swisher, Pvts. Norris M. Gathercoal, Stuart W. Gordon and William S. Steinmetz, Chanute Field; Pvt. George A. Baxter, Crissy Field; Pvt. Lewis A. Jackson, Scott Field; Pvt. 1st cl. Donald C. Waldridge and Pvt. Earl S. Hagen, Marshall Field; Pvt. 1st cl. Harold Ross Jordan, Pvts. Rolla L. Compton and Harry T. Smith, Kelly Field; Pvt. 1st cl. Glenn E. Thomas, Fort Bliss.

U. S. NAVAL AVIATION

Aviation Training Class at Pensacola

Class Twenty, for student Naval aviators, at the Naval Air Station at Pensacola, Fla., now numbers 59 members. Ground School instruction for this class commenced during the first part of this month. Comdr. R. D. Weyerbacher, (C.C.) U.S.N., the Naval Constructor who was in charge of the assembly of the airship Shenandoah at Lakehurst, N. J., is a member.

Great Lakes Aviation Mechanics School

Twenty-one men graduated from the Aviation Mechanics School at the Naval Training Station at Great Lakes, Ill., on March 1. On the same day twenty-five men, graduates from the school, were transferred to the U.S.S. California, now at New York, for further assignment by the Commander-in-Chief, Battle Fleet.

Aircraft Squadrons Battle Fleet

The fast work of the Aircraft Squadrons Battle Fleet in disembarking and embarking at the Naval Air Station at Coco Solo was commended by Capt. Noble E. Irwin, U.S.N., Commandant, 15th Naval District (Canal Zone) in a letter to the Commander of those Squadrons, Capt. A. W. Marshall, U.S.N. The following is quoted from the letter: "Within two days after arriving, all the planes belonging to the Aircraft Squadrons Battle Fleet were disembarked from the U.S.S. Jason, landed ashore, assembled and on the line ready to take the air. Upon departing, the work of disassembling, embarking and stowing was performed in a like period. The Commandant wishes to commend most highly the work of the Commander, Air Squadrons, and his officers and men in performing a task of such magnitude and completing it so skillfully, so rapidly and so efficiently."

The personnel of the Aircraft Squadrons Battle Fleet left Culebra, Porto Rico, on Feb. 26 for Key West, Fla., on the U.S.S. Aroostook, arriving there March 1. A detachment of men remained at Camp Robison, Culebra, for the purpose of upkeep of the planes and material which remained there.

Prior to the departure from Culebra the DT seaplanes of the Squadrons participated in a sortie of the Fleet from Culebra, on Feb. 24. During the week ending the 23rd extended flights were made to survey landing fields in the vicinity of Porto Rico and St. Croix. Several excellent fields were located, including one at the race track at St. Croix.

While at Key West, the personnel of the Squadrons will be granted leave and liberty, and will take part in athletic events. One of the CS1 planes from Scouting Plane Squadron Three at Anacostia, D.C., that attended the Miami Air Meet flew to Key West a short time before the races. The pilot of the plane, Lieut. Comdr. C. P. Mason, U.S.N., was welcomed at Key West by Capt. A. W. Marshall, Commander of the Aircraft Squadrons. The plane made flights at Key West and was inspected by the personnel of the Squadrons.

New Type Plane for Naval Aviation

As a step forward in the solution of the problem of producing cheaper planes, the Navy Department has recently purchased three planes with a fuselage constructed of molded fiber. One of these planes has recently been delivered to the Naval Air Station at Anacostia, D. C., where it is undergoing tests.

In the construction of these planes, the fiber for the fuselage is compressed into sheets, and the fuselage sections are stamped out. By this method a very much faster rate of production is possible, together with a marked decrease in cost, as the material can be produced much cheaper than the usual fuselage construction. This feature of cheaper and larger scale production, which this method makes possible, besides having obvious advantages in the construction of commercial aircraft, will be of great importance from a military point of view, making it easier to produce large numbers of planes quickly and cheaply in time of emergency.

The tests at Anacostia will determine whether or not the plane will stand up under service conditions. Besides the plane at Anacostia, two more are being sent to the Naval Air Station at Pensacola, Fla., where similar tests will be made.

The planes are single-seater biplanes, and are manufactured by the Longren Aircraft Corp. of Topeka, Kan. They have a Wright (Lawrance type) three-cylinder air-cooled engine of 60 hp.

Collision of Planes

The Commanding Officer of the Naval Air Station Pensacola reported that at 9:00 a. m. on March 17 two DH land planes collided in the air at Corry Field while engaged in formation spotting flying at an altitude of 1500 ft.

Plane DH 6379 with Lieut. (jg) Charles D. Porter as pilot, and Lieut. (jg) Olin R. Miner, radio operator, crashed to complete wreck. Lieutenants Porter and Miner were both instantly killed in line of duty.

Plane DH 6357 with Lieut. Henry M. Mullinnix as pilot and Lieut. Thomas G. Fisher, radio operator, landed under control without injury to personnel.

Langley Gives Demonstration Flight

Demonstration flights of landing and taking off from the flying deck of the U.S.S. Langley, aircraft carrier, were given to newspaper men before the vessel left Culebra, Porto Rico. On Feb. 19 the Langley proceeded a few miles out to sea with eighty-eight newspaper men from twenty-three states on board. Three exhibition flights were made, after which the visitors were shown over the ship and attended motion pictures of aircraft carriers in operation. The Commanding Officer, Capt. S. H. R. Doyle, U.S.N., and the Executive Officer, Comdr. Kenneth Whiting, U.S.N., each delivered a lecture to the journalists on the functions of aircraft carriers. After the return to Culebra, the same day, the Langley got under way for the Naval Air Station at Pensacola, Fla., which was reached on Feb. 25. On March 1 the student aviators from the Naval Air Station were visitors on board, inspecting the ship and attending motion pictures of operations.

Pensacola Planes Participate in Celebration

Planes for the Naval Air Station at Pensacola, Fla., participated in the recent Mardi Gras celebrations at New Orleans and Mobile, Ala. A detachment of two seaplanes and three landplanes under the command of Lieut. C. McGauly, U.S.N., left Pensacola for Mobile on Feb. 29. The same day an F5L under the command of Lieut. J. D. Alvis, U.S.N., left the station for New Orleans. The U.S.S. Allegheny left the station on Feb. 28 for Miami, Fla., with all necessary equipment aboard for the seaplane entries from Pensacola in the races at the Miami Air Meet, held on March 7 and 8. The planes from Mobile and New Orleans returned to the station on March 5.

Patoka to Carry Four Planes

The U.S.S. Patoka, designated as an airship tender for the airship Shenandoah will be fitted with cradles for three SDW1 and one DT planes, besides the mooring mast for the airship. The Patoka will be used, when completed, as an airship tender for the Fleet. The Patoka is undergoing alterations at the Navy Yard, Norfolk, Va.

CALENDAR OF AERONAUTICAL EVENTS

March 7-8.	Curtiss Marine Flying Trophy Race and Flying Meet, Miami, Fla.
March 17.	Start of World Flight of the U. S. Army Air Service, Los Angeles.
March 31.	Closing date for papers submitted to Royal Aeronautical Society of Great Britain for the R38 Memorial Prize.
April 23.	National Balloon Race, San Antonio, Tex.
June 3-11.	International Aircraft Expositon, Prague, Czechoslovakia.
June 15.	Gordon Bennett International Balloon Race, Brussels, Belgium.
June 21.	Annual F.A.I. Conference, Paris, France.
June 22.	Commodore Beaumont International Cup Race for high speed airplanes, Istres, France.
July 5-6.	Zenith International Airplane Efficiency Race, Paris, France.
August.	"Tour de France des Avionnettes." International Round-France race for light airplanes.
Oct. 2-4.	International Air Races, incl. Pulitzer Trophy Race, Dayton, Ohio.
Oct. 24-25.	Schneider Cup Race, Baltimore.
Dec. 17.	Twenty-first anniversary of the first successful airplane flight.

BACKFIRES

Alarming symptoms of the decline of geographical knowledge in this great Republic are found in a news "release" issued by a body concerned with the interests of the aircraft industry. One of the stopping places of our World Fliers is blandly put down in that document as "Strassburg, Germany."

* * *

"Sealed proposals will be received * * * * * *for carrying Untied States mails* on the route hereinafter described, etc."—says a memorandum issued by the P.O.D.

Apparently the mail bags will be thrown into the planes *untied* to accelerate delivery.

* * *

"The first rays of the morning sun glistened on the brasswork of his Liberty engine," writes one of our friends in a highly imaginative fiction story.

No doubt, the heavy dew was meantime corroding the platinum struts of the landing gear.

* * *

"Who is that raving maniac?" queried the visitor who was being shown around in an up to date insane asylum.

"That poor fellow? Why he used to be the editor of an aeronautical magazine. The apparent reason for his insanity is very peculiar. It appears that his work was quite strenuous, but that he stood it fairly well until one day he overheard one aircraft constructor praise the product of another aircraft constructor. That moment he just caved in. And here he is now."

* * *

"Before the war, I brought the first big practical airship to this country (England)—the Astra-Torres, *which conveyed the whole of the Expeditionary Force in 1914*," G. Holt Thomas is quoted as saying in an advance proof of a lecture given before the British Institute of Transport.

That airship must have had a truly amazing carrying capacity. Evidently another revolutionary advance the clever Britons have carefully kept hidden all these years.

* * *

"And now," writes a Portuguese aviator in *L'Air*, concluding an article on the several world flight projects, "it remains to be seen who will win the $500,000 prize of the Aero Club of America."

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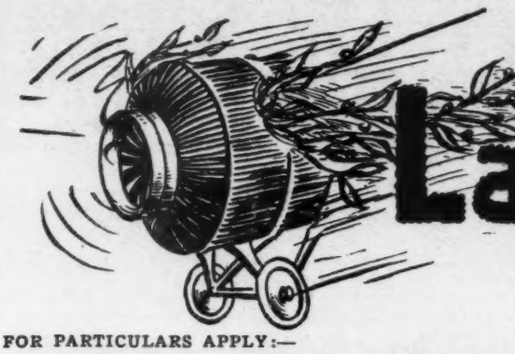

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Guaranteed nitrate dope, $2.50 per gal., or 5 gals. $10.00. Good acetate dope, 5 gals. $7.50; approximately 50 gal. drums acetate dope, $30.00 Cleveland, or $27.50 Buffalo. Acetone, for removing varnish or pigment or paint, $2.75 per gal. A grade cotton, 75 cents per yd.; cotton tape, 6 cents per yd.; heavy, excellent grade linen, 90 cents per yd. NAK wide-vision, non-shatterable goggles, $5.00; Jumbo non-shatterable goggles, $3.50. Spring weight tan leather helmets, $4.50; winter weight, $6.50; ladies' size, bobbed or unbobbed, spring weight helmets, $5.25. Gosport two-way speaking tubes, with O. D. helmets, $12.50. New compasses, $15.00. Climb or banking indicators, $2.50. OX5 piston rings, Burd high compression, 15 cents; piston pins, 60 cents; connecting rod bearings, 60 cents per half; piston, $2.50; black shock absorber cord ½", 15 cents per yd.; new fresh ½" S. A. cord, 65 cents per yd.; new fresh ⅝" S. A. cord, 85 cents per yd.

Wheels, 26 x 4, $4.00; 26 x 4 wheels, with streamline covers, dandies, $6.50; new 26 x 4 cord casings, $4.00; freshly made 26 x 4 tubes, $2.00; metal wing skid for Canuck or JN4D, $1.20; Zenith OX5 carburetor, $12.50; new Barling magneto, $17.50; carburetor jet wrench, 50 cents; Champion or AC spark plugs, 40 cents; Paragon or U. S. metal tipped toothpick propeller for OX5, $15.00; CAL untipped $10.00; Flottorp metal tipped propeller, $20.00; leather magneto covers, 75 cents; rotary map case—rotate as trip progresses, $3.50; all tools for OX5 and OXX6.

New 80 HP LeRhone motors, with propeller hub assembly and crank shaft nut, $77.50 Philadelphia. Valve action assembly for OX5 or OXX6, per cylinder, $5.50; new cylinder for OX5, $5.00; new cylinder for OXX6, $7.50; piston rings for OXX6, 32 cents; OXX6 piston, $5.50.

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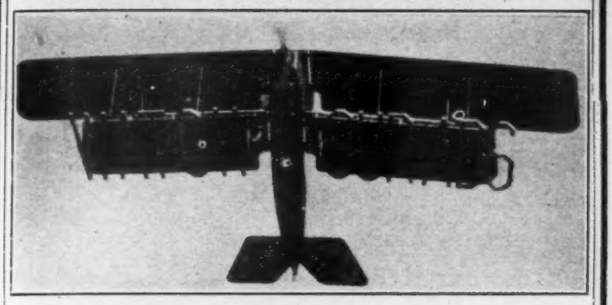

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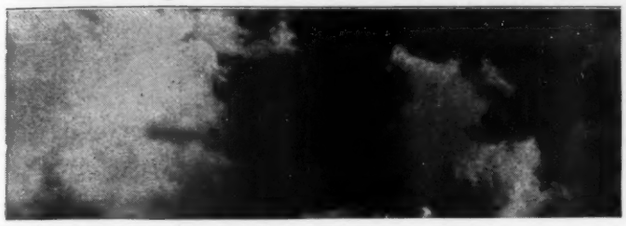

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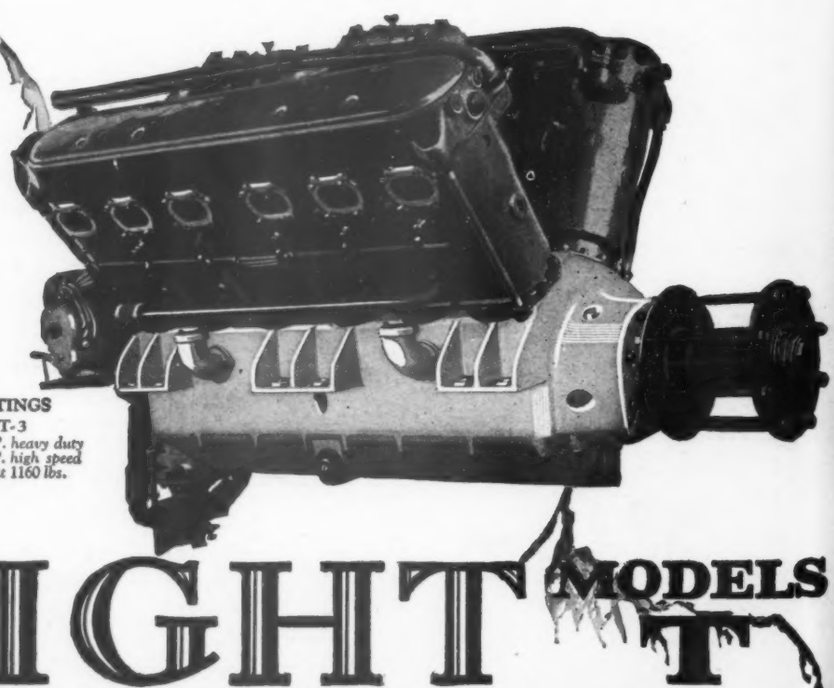

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